An Investigation of a Pedagogical Framework of Chinese Character Teaching for Beginning Leaners in Australian Schools – An Action Research

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Declaration

I declare that except where due acknowledgement has been made, this research proposal is my own work and has not been submitted in any form for another degree at any university or other institute of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

Yuanhong Wu

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ABSTRACT

This research is an investigation of a pedagogical framework of Chinese character teaching for beginning learners in Australian schools. Through an action research carried out in Rainbow Public School among stage three students, this research aims to develop a new framework for teaching Chinese characters at the basis of Chinese traditional Liu-shu theory, combining western L1/L2 transfer theory as well as dual-coding theory. This research helps new Mandarin teachers familiarise with Australian students’ thinking mode, and offers teachers important reference in Chinese character teaching.

Through the research, it is found that the principles in Liu-shu theory are suitable in teaching Chinese characters with high iconicity. The characters with low iconicity are taught with the newly developed character-teaching framework, which includes modernised pictographic principle and modernised associative principle. Modernised pictographic principle is analysed from two aspects: teacher- supplied mnemonics and student- self- generated mnemonics. Modernised associative principle is divided into two steps: deconstructing characters into simple Chinese characters or English letter and numbers, and reconstructing them with story-telling.
Chapter 1 Introduction

1.0 Introduction

This thesis focuses on discovering the problems existing in teaching Chinese characters in Western Sydney schools. Starting the teaching practice based on Liu-shu theory, the teacher-researcher aims to firstly explore the limitation of this ancient Chinese language learning theory, Liu-shu. More importantly, the researcher goes beyond Liu-shu theory and takes on board other modern L1/L2 transfer theories as well as dual-coding theory in her teaching. By doing so, this research develops a suitable framework for teaching Chinese characters for Australian school students in their Mandarin classes. In the introduction chapter, she provides some information on Australian context in terms of its Asian language policy. Then she provides a review of the debate on whether Chinese characters or Pinyin should be the focus in Chinese language education. Informed by this context and the debate, and her observation of Mandarin classes in Western Sydney schools, she raised the research questions. The significance, aims, outcomes and thesis outlines are followed.

1.1 Australian Context

In the past decades, globalization has fastened greatly its speed. As a consequence, new and exciting opportunities for Australians are emerging. This heightens the need to nurture an appreciation of and respect for social and cultural diversity, and a sense of global citizenship (MLA, et al, 2004, p.4). As one of the growing power in the world, China is undoubtedly one of the most important countries Australia has been engaging with in economically and culturally. Orton (2008) once labeled China as a regional neighbour, the largest trading partner, a rising world economic power, a major source of immigrant workforce, a major source of international students, a major source of tourists to Australia and also a country with a long and prestigious culture (Orton, 2008, p.8). It seems that Australia’s fate is likely to remain solidly bound up with its relationship with China (Orton, 2008, p. 9).
The aim of closer connecting the relationship between Australia and China, both in society and economy, needs a group of Australians who can well comprehend Chinese culture as well as speak Chinese language. Statistically, by the end of 2007, fewer than 20% of Australians working in China can speak the language, and only 10% have studied only one China-related subject. At Year 12 nationally, a scant 3% of students take Chinese, 94% of whom are first language speakers of Chinese (Orton, 2008, p.5). In order to better advance Chinese teaching in Australia, two significant national programs, the National Asian Languages and Studies in Australian Schools Strategy (1995–2002) and the National Asian Languages and Studies in Schools Program (2008 – 2012) have been mounted in response (The Asian Education Foundation, 2012).

The National Asian Languages and Studies in Australian Schools Strategy program (abbreviated as NALSAS) is established for responding to Council of Australian Governments (COAG) Working Group on Asian Languages and Cultures report named Asian Languages and Australia’s Economic Future. One of its major purposes is to ‘improve participation and proficiency levels in language learning in four targeted Asian languages- Japanese, Modern Standard Chinese, Indonesian and Korean, and to support the studies of Asia across the curriculum’ (The Asian Education Foundation, 2012). Another program, named National Asian Languages and Studies in Schools Program (abbreviated as NALSSP), started in 2008, with the funding of $62.4 million. The main target of this program is to ‘increase opportunities for school students to become familiar with the languages and cultures of Australia’s key regional neighbors, namely, China, Indonesia, Japan and Korea.’ (The Asian Education Foundation, 2012). The program has an ambitious objective-‘by 2020, at least 12 per cent of students will exit Year 12 with a fluency in one of the target Asian languages sufficient for engaging in trade and commerce in Asia and/or university study’ (Sturak,& Naughten, 2010, p. 3).

However, even with so much effort put in Chinese language teaching, the results of these two programs are not as ideal as they were thought to be. As stated by ABC, the Australia’s public broadcaster, the number of children now studying Asian languages has dropped so alarmingly in recent years to just 5.4 per cent, there are now more students studying Latin than Chinese. (Language lessons languish in Aussie schools, 2008)
This awkward situation is caused by several reasons. First of all, the presence of strong numbers of first language speakers, locally born or otherwise, who share their classes and overwhelm them in assessment (Orton, 2008, p.5). The students easily realize that even with great efforts, their Chinese can’t be compared with those who speak it as the mother language. According to ABC, language educators say while native Chinese speakers have every right to use their Chinese to beef up their marks for university entrance, the students from non-Chinese backgrounds now drop out by Year 10 (Language lessons languish in Aussie schools, 2008). In addition, the L2 learners lack success in developing proficiency, which is due to the intrinsic difficulties of Chinese for an English-speaker (The Asian Education Foundation, 2012, p. 15). Chinese is not a Roman language as English is, which may cause difficulty in learning. Students may find it hard to learn Chinese grammars and word orders. The cause generally comes down to finding it hard and/or boring, and feeling they are not making much progress despite their best efforts. While students realize the importance of Chinese, they still subconsciously regard it as a hard job to do.

Another chief barrier comes from the lack of skilled Chinese teacher. Orton (2008) admitted that in all sectors in Tasmania and Western Australia, for example, the lack of supply has constrained development (Orton, 2008, p.21). Undeniably, Chinese teacher’s quality is also a big problem. Teachers from China are described as ‘lovely’ but their lack of familiarity with the English system of discipline and target setting. They also tend to have different, perhaps unrealistic, expectations of pupils.

1.1.1 Debate over Teaching Chinese Characters

Chinese characters are often regarded as the most difficult part in Chinese language because it is extremely different from English. A recent survey (Shen, 2004) regarding the most difficult challenges for students of Chinese as a foreign language in pre-college programs suggests that character learning is the greatest challenge.

One is the large number of characters to be acquired before becoming literate. According to Zhonghua Zihai dictionary, the largest Chinese character dictionary available for print, there are 87,019 modern Chinese characters, among which 3000 characters cover more than 99% written materials (Sung & Wu, 2011). Even for
second-language learners, the minimum number of Chinese characters should reach 500, a number reached in China, Hong Kong and Taiwan in Grade 1 primary (Orton, 2008). Huang & Ma (2006) introduced that each stroke is written with a single action while most characters are composed of two or more strokes. With the exception of several single-stroke characters, individual strokes have no meaning in isolation while characters represent a complex interweaving of sound, shape, and meaning. And it would be more difficult that students also have to remember the order of strokes. It may be an important reason that 95% of students give up learning Chinese before year 12 because it is such a heavy burden.

Another argument about the barrier for students to learn Chinese characters was the relative lack of correspondence between a character and its pronunciation (Sung & Wu, 2011). A character is constructed by combining several strokes in two dimensions. Therefore, Chinese characters are much harder to pronounce than any other languages (Huang & Ma, 2006). There are a lot of pictographic-phonetic compound ideograms existed in Chinese characters. According to statistics, it is estimated that about 90% of modern Chinese characters are phonetic-semantic compounds (Shen, 2005). It is argued that if students are familiar with some Chinese radicals, they would find it more stress-free to pronounce. However, it is argued that in modern Chinese, the reliability of the phonetic radical cuing the sound of a compound character is very low (Shen, 2005 cited from Fan et al., 1984).

### 1.1.2 Debate over Teaching in Pinyin

Chinese pinyin is an assisting means for teaching Chinese language. Lee & Kalyuga (2002) once defined Chinese pinyin (or Hanyu pinyin) represents one of the modern phonic transcription systems that assists students in learning pronunciation of characters in Pu-tonghua (the official spoken language of China, also called Mandarin). Chung (2002) on the other hand, defined it as a romanised alphabet: the word literally means to form sounds used on the Chinese mainland into spellings. It is considered to be a convention for the students in mainland of China to pair pinyin with Chinese characters. The definition by Orton (2008) is considered to be the most accurate one. This is an almost phonetic alphabet based on European writing and allows students to note how to pronounce characters as well as to write more fully than their character store may permit. In the mainland of China, it is taken as a
convention to teach Chinese characters paired with *pinyin*. There is an assumption that a passage wholly written in *pinyin* can be understood by a native Chinese speaker. However, the effectiveness of *pinyin* may depend on the learners’ prior familiarity with the vocabulary in their spoken language (Lee & Kalyuga, 2011, p.1104), but that is something foreign language learners lack. Thus it is a completely different issue of whether *pinyin* should be also used as a major method for teaching foreign students Chinese.

Those who argue for teaching *Pinyin* proclaim the advantages of teaching *pinyin* in CFL classes. Since Chinese is different from English, which has no connection between characters and the pronunciation, thus *pinyin* can help students learn Chinese in a way that learners are more familiar with. Tse, Marton & Loh (2007) describe *pinyin* as a system enabling learners to access the sound of characters and how they are pronounced. When learners know what the *Pinyin* says, they are better able to attach sound to the ideographs (individually or in combination) and to the meaning (p.381). Chung (2002) also proposes the same opinion. *Pinyin* helps pronunciation in that even though Chinese characters generally contain a phonetic component, this component is not a systematic guide to pronunciation. *Pinyin* helps learners to pronounce new characters easily and correctly. What’s more, *pinyin* can help to reduce learner’s cognitive load and their fear for Chinese language. When facing something different and seems difficult, students will feel strange and fear to learn it. However, with *pinyin*, which is close to English, they are more likely to feel more comfortable and confident. Especially when they find they can pronounce easily with their prior knowledge, they are more likely to have a sense of success. Thirdly, *pinyin* makes it possible for foreign language learners to learn Chinese language by themselves. Chung (2002) put forward the opinion that knowledge of *pinyin* assists learners to pronounce new characters via sub-lexical phonology without assistance from the teacher.

*Pinyin* still owns a lot of disadvantages, which make it an auxiliary instrument only, but not possibly take the place of Chinese characters. Reference to the research literature on the effect of a picture prompt on sight word learning and the effect of presenting an L1 word during L2 vocabulary instruction, suggests that the presentation of *pinyin* and an L1 equivalent to assist the learning of a Chinese character may not be the best approach (Chung, 2002).
First, since *Pinyin* is a Romanized alphabet, it is quite possible for foreign students, who use English as the first language, to confuse *Pinyin* with English, which will actually add their cognitive load. Chung (2002) said that when learners begin their study of Chinese in Australia and United States, they often begin to acquire some spoken language through a system that represents Chinese via Roman alphabet script (*pinyin*) before they undertake the task of learning Chinese characters. Xu, Bao, & Xu (1997) also agree that for learners whose native language shares the alphabet with *pinyin* (e.g., English-speaking learners), using *pinyin* to enhance learning accurate pronunciation may require extra cognitive effort for distinguishing *pinyin* pronunciation from pronunciation of English (Lee & Kalyuga, 2011, cited from Xu, Bao & Xu, 1997). McGinnis (1997) also puts forward a similar opinion. He suggested the term the ‘can’ effect to describe the situations when *pinyin* spellings could be very easily confused with pronunciation of English (e.g., ‘can’ is pronounced as /ts’an/ in *pinyin*). In addition, students may also require cognitive resources to cross-reference the Mandarin pronunciation of characters with their Cantonese pronunciation (Lee & Kalyuga, 2011, cited from McGinnis, 1997). For example, in *pinyin* ‘can’ is pronounced as /ts’an/, while in English it should be pronounced as [kæn]. The meaning of them two are also completely different. ‘Can’ in Chinese means participation while in English it means being able to.

Second, since *pinyin* has no relationship with the character’s real meaning, it may also add more cognitive load for learners. Geelan (1979) said that the first difficulty is a linguistic one not directly related to Chinese itself. Chung (2002) also proposed the opinion that if simultaneously presented prompts such as first language words or pictures, it would be more difficult for second language learners to realize the real meaning of words. However, the problem can be partly solved by the teaching of Chinese characters because Chinese characters’ shapes can be closely connected with the meaning. As mentioned in the introduction to Liu-shu theory, there are a large number of characters created according to the picture of the real things, such as 日 and 月 (which means sun and moon in English), which means it would be easier for learners to build up connection between the shape and the meaning.

Third, another barrier that stops *Pinyin* from taking the place of Chinese characters is the large number of homophones in Chinese. If written Chinese on the one hand is
graphically very rich—between 47,000 and 85,000 distinct characters, depending on sources—spoken Chinese on the other hand is phonetically rather poor relative to most Indo-European languages. Chinese only has around 1,300 tone syllables, or about 410 base syllables (Arsenault, 2011 p.111, cited in Kangxizidian, 1993; Hanyudazidian, 1988-1994; Zhonghuazidian, 1994). The huge gap between pinyin and Chinese characters causes the existence of many homophones. Thus students are quite likely to get confused when they realize the same pinyin may represent different meanings. Simplex syllables in Chinese, when represented in pinyin without context, are ambiguous because of homophony in about eight out of nine cases. However, the ambiguity is resolved about 95% of the time when the same syllables occur in strings as short as two-syllable constructions (King, Paul L. 1983). A variety of Chinese dialects across China are also a big problem because different dialects may have the different pronunciation for the same word. Tse, Marton, & Loh (2007) give a detailed example of teaching Cantonese in Hongkong. In Hong Kong, over 90% of the residents speak the Cantonese dialect. The initial teaching of the reading of Chinese characters in Hong Kong typically focuses on Cantonese; and that teaching is generally done without the support of a phonic transcription system.

1.2 Personal Experience: Why does the Teacher-researcher Want to Explore Chinese Character Teaching?

In 2008, the NSW Department of Education and Community (NSWDEC), the University of Western Sydney (UWS) and Ningbo Municipal Education Bureau (NMEB) in China signed a Memorandum of Understanding (MoU) to promote Chinese literacy in western Sydney schools in Australia (Singh & Zhao, 2008). Each year, NMEB selects up to 10 graduates in Ningbo and send them to Australia as volunteer teacher researchers (VTRs). They are labelled as teacher-researchers because these VTRs teach Mandarin in primary schools and high schools of Western Sydney region and at the same time conduct their Master degree with School of Education, University of Western Sydney.

The teacher-researcher is one of the VTRs. Before starting to teach, she was sent to a high school and a primary school in Western Sydney for a term of teaching observation. During her observation, the researcher found that Australian students
learned Mandarin, focusing on *Pinyin*, which is a Romanised phonetic system originally generated to assist pronunciation of Mandarin, instead of Chinese characters. At the end of the term, the students in the high school observed were required by their class teacher to write a self-introduction in Mandarin. However, all of them wrote introductions with *Pinyin*. This is a bit shock for the teacher-researcher who grew up in China and always believes that Chinese language is composed of Chinese characters rather than *Pinyin*.

Chinese character is a vital part of Chinese language. The Chinese language without Chinese characters is not real Chinese. China is a multilingual and multicultural country. It owns 56 ethnical groups and more than 80 dialects. Some dialects in speaking and pronunciation are so different from each other that people in different places may not be able to understand each other at all. However, Chinese characters are the same in different dialects in the whole country (apart from Tibet), which means communication in written characters, are more reliable than in oral *Pinyin*. More importantly, there is a phenomenon in Chinese language we should pay extra attention to: homophones. For example, with the same pronunciation, 飞, it can represent the Chinese character 飞, which means fly, or it can signify 非, which means no, or even it can indicate 妃, which means the emperor’s wife. The phenomenon like this is actually very common in Chinese language. According to Orton (2008), one pronunciation can represent up to 20 different characters, and without looking at their written form, and with limited context, listeners can be very confused at which word among the 20 the speaker refers to. Thus if students focus on *Pinyin* learning instead of characters, they can be easily confused, with more homophone words learned. Besides, Mandarin is a tone language. Words with same pronunciation but different tones represent different characters and meanings. Thus this can add to the confusion of *Pinyin* learning.

In addition, Chinese character itself represents a part of Chinese culture. Tracing back to Shang Dynasty, Chinese characters enjoy a history of more than three thousand years, which, to some extent, witness the Chinese history. According to Xu Shen, there are in total six principles of formation: pictographic principle, indicative principle, associative principle, pictographic-phonetic principle, rebus (phonetic loan) principle and derivative principle. Compared with *pinyin*, which can indicate no
meaning and is quite possible to get jumbled with English, Chinese characters connect more closely with real meanings and are more stimulating. A student in the teacher-researcher’s primary school class sent her a picture of a Chinese character, “正”, which means positive or correct in Chinese. He has never learned this Chinese character before. But in his picture, he wrote “I don’t know the meaning of it, I just find this symbol very cool”.

All these make the teacher-researcher think what a tragedy it is if students in Australia miss out the most essential and interesting part of Chinese language—Chinese characters, which is so attractive, meaningful and vivid. Thus she decides to devote her great efforts to addressing the problem of teaching Chinese during master studies in Australia. After her practice in 2 local schools, she was eager to explore an effective framework of teaching Chinese characters, taking Liu-shu theory as starting point.

1.3 Research Question

Combining Australia’s context of language policy and practice, with the researcher’s personal experience in observing and reflecting on Australian Mandarin class, the researcher raised the following question:

- How can Liu-shu, the Chinese language learning theory, be combined with Western L1/L2 transfer theories and developed into a pedagogical framework to be employed in teaching Australian students in their Mandarin class?

The contributory research questions are:

- What is Liu-shu theory and how has it been used in teaching Chinese as first language and second/foreign language?

- Is traditional Liu-shu theory suitable for teaching Chinese character to Australian beginning learners in Australian schools?

- What strategies of Chinese character teaching could be developed and employed in teaching Australian students in their Mandarin class?
1.4 Significance of the Study

Firstly, this research responds to the Australian government’s Asian language policy. As introduced in the background part, China has become an important country that Australia eagers to keep close connection with. As Melbourne Declaration on Educational Goals for Young Australians declares, ‘India, China and other Asian nations are growing and their influence on the world is increasing. Australians need to become ‘Asia literate’, engaging and building strong relationships with Asia’ (MLA, 2008, p.4). Two programs NALSSP and NALSAS are also established to support the Asian policy. Orton (2008) claimed if the dropout rate is not so high, the number of students who learn Mandarin as an Asian foreign language would reach the 2020 goal. However, things do not go so smooth. As statistics shows, approximately 95% of students give up learning Chinese before year 12. What’s worse, it was found that among the 3% students learning Chinese, 94% of them are Chinese native speakers. The way of addressing the problem of students losing interest in learning Chinese should be considered seriously. The Chinese character is a big part of Chinese language. Many Australians consider it as something very tough and distant. However that’s not true. In fact, Chinese character is a very interesting part of Chinese language, which carries long history and contains rich Chinese culture. At the end of the research, the researcher aims to build a framework, which can be employed in teaching Chinese characters in a way Australian students interested in. It helps to stimulate students’ interest in learning Chinese.

Secondly, this research contributes to the scope of broadening the understanding of Australian language learners and language policy makers that Chinese language learning is not Pinyin learning and characters are the truly essential in Chinese language. It is not practical to teach Chinese language completely with pinyin, which is only an assistant means for pronunciation. What’s more, learning Chinese characters solve the confusion caused by homophones in Pinyin-only learning. More importantly, when learning Chinese characters appropriately, students will find that Chinese language is learnable and it is not as difficult as it is thought to be. Once grasping the grammatical rules, students will find that Chinese characters are easier for memory in terms of their pronunciation compared to memorising Pinyin. For example, the character 仑 is pronounced “lun”, all the others characters that have 仑
as a radical part are pronounced the same (e.g. 轮, 论, 伦, 抡). Some grammatical rules in Chinese characters are very helpful for students to remember their meanings according to the radicals contained in them. For example, 氵, is a radical part of many characters, which means water. Thus those words that contain it are all related to water (e.g. 游泳/swimming, 洗澡/have a bath, 江/river, 湖/lake and 海/sea).

All in all, this research seeks to establish a pedagogical framework of teaching Chinese characters that can make Chinese language learnable to Australian school students. Through that, the teacher-researcher hopes to help reduce their cognitive load in learning Chinese characters and stimulates their interest.

1.5 Aims
This research aims to:

• Develop a pedagogical framework of Chinese character teaching in teaching Australian students in their Mandarin class, based on Chinese Liu-shu theory and other western L1/L2 transfer theories.

• Make Chinese language learnable through exploring teaching methods of Chinese character.

1.6 Research Outcomes
This research focuses on exploring the importance of teaching Chinese characters and is aimed to find out an effective framework of teaching Chinese characters with the basis of Chinese language learning theory, Liu-shu theory. The outcomes of this study are:

• Identifying the barriers CFL students have in their learning of Chinese characters.

• Testing Liu-shu theory and current L1/L2 transfer theories in applying for teaching Australian students Chinese characters

• Establishing a pedagogical framework of teaching Chinese characters through the examination of Liu-shu and other L1/L2 transfer theories
1.7 Thesis Outline

The preceded focus and arguments are developed in the following six chapters.

Chapter 2 reviews the literature on the Liu-shu theory, debating over teaching in *pinyin*, usage of Liu-shu theory in Chinese character teaching and introduction of L1/L2 transfer and scaffolding theory.

Chapter 3 presents the methodology and methods of this study. It mainly illustrates the application of qualitative action research, research design, data collection approaches (structured interviews, semi-structured interviews, self-reflective journals and focus group). Ethic issues, generalisibility and triangulation are also discussed in this chapter.

Chapter 4 examines the principles in traditional Liu-shu theory. Because the characters created according to rebus principle and derivative principle take very small portion of the Chinese characters, the teacher-researcher thus mainly examine the other four principles, which are pictographic principle, indicative principle, associative principle and pictographic-phonetic principle. These four principles are found useful in teaching some characters, but not for all of them. Thus other methodologies are explored and tested in the following two chapters.

Chapter 5 presents the modernised pictographic principle. The principle is analysed from two angles: teacher-supplied mnemonics and students-self-generated mnemonics. The strengths and weakness of this principle are discussed at the end of the chapter. Suggestions about making fully use of this principle are given as well.

Chapter 6 majorly introduces the modern associative principle, which is composed of deconstruction and reconstruction. Apart from that, it also introduces other assistant character teaching methods, including teaching with characters’ developmental stories, teaching with handicrafts: paper-cutting, teaching with Chinese character writing games. At the end of this chapter, discussions are carried out about the advantages and disadvantages of this teaching method.

Chapter 7 summarizes all the findings that show the research capabilities throughout the whole chapters. Besides, it also concludes the key contributions, limitations, implications and recommendations that explored in the study which make a great
influence to teach Chinese characters in Australian classes.
Chapter 2 Literature Review

2.0 Introduction

This section focuses on reviewing the literature. Firstly, it reviews Liu-shu, the theory of Chinese character learning and how this theory has been used in Chinese language teaching and learning. After that, the current western L1/L2 transfer theories and dual-coding theory, as well as how these theories have been employed in second/foreign language teaching and learning are reviewed.

2.1 An Introduction of Chinese Characters

Chinese language is different from English. Chinese language has no alphabetic; instead, it uses Chinese characters as the smallest functional unit for writing. Chinese characters are based on the association of meaningful morphemes with graphic units (square, nonlinear configuration), whereas alphabetic systems are based on the association of phonemes with graphemic symbols (having a linear structure) (Huang & Ma, 2006, p.9). Chinese characters are composed of strokes combined in such a way as to form structures that can be called ‘radicals’ (Taft & Chung, 1999, p.243 ). Radicals are usually derived from a simple character and are used as the base of a character to indicate the character’s attributes (Huang & Ma, 2006, p.10). One of the best examples should be 日，which represents the ‘sun’ in Chinese. It can be the radical for characters like 晒 (bask), 旦 (daytime) or 明(bright). However, more characters are actually composed of more than one radicals. Figure I shows some examples of Chinese characters made up of two or more radicals.

Figure 2.1: Chinese Character Structure (Tse, Marton, & Loh, 2007, p. 377.)
The smaller component for Chinese characters, or actually the smallest component should be stroke. The stroke is the smallest unit of a Chinese character, and the visual complexity of a character depends on the number of strokes of which it is composed (Lee & Kalyuga, 2011 cited from Shu, 2003). According to Shen(2005), there are totally 28 distinguishable types of strokes, and the number of strokes in a particular character may vary from 1 to 30 (cited from Huang & Liao, 1981). There are no rules about how many strokes a character can have (p.50).

Figure 2.2: Relationship Among Strokes, Characters, Word and Sentence

<table>
<thead>
<tr>
<th>Stroke</th>
<th>一(横); 一（横折）; 丨（竖）; 丶（点）</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>中 (middle); 国 (kingdom)</td>
</tr>
<tr>
<td>Word</td>
<td>中国 (China, originally means middle kingdom)</td>
</tr>
<tr>
<td>Sentence</td>
<td>中国拥有五千多年的历史。(China has a history of more than five thousand years.)</td>
</tr>
</tbody>
</table>

The figure above shows the relationship among strokes, characters, word and sentence. Chinese character enjoys a very long history and contains a great amount of Chinese culture. According to Huang & Ma (2006), there are now 5731 most frequently used Chinese characters in daily life and more than 45000 characters can be found in Kang-xi Dictionary. In the following section, Liu-shu theory will be introduced.

According to Shen (2005), character learning involves three linguistic components: character recognition, character meaning and character writing. Allen (2008) conducted research into hand-writing Chinese characters and concluded that learning to write Chinese characters (hanzi) from memory is an extremely inefficient use of time for students of Chinese as a foreign language. So the character recognition and character meaning should be put most attention to. According Wang, Li, Zhong & Xu (1994, p.23), it needs to notice that many CFL learners have a different understanding of Chinese characters compared with Chinese native speakers. For CFL students, Chinese characters are only meaningless symbols.
Many literatures prove another big problem for character teaching, that is with the time goes by, Chinese characters experienced a lot of transformations. The simplification of Chinese characters leads to a lot of change on Chinese character forms. Zhang (2009) suggests that simplified Chinese characters always combine several characters with different meanings into one, which inevitably leads to chaos in the primarily reasonable Chinese character system. In addition, characters’ pronunciations experienced some changes too. Zhang (2004) conducted research into the transformation of 江’s (river) pronunciation and found it changes from “kōng” to “gōng”.

2.2 Liu-shu Theory

The norm - Liu-shu, first appeared in Zhouli, a book about statecraft in Zhou Dynasty. 保氏掌谏王恶, 而养国子以道。乃教之六艺: 一日五礼, 二日六乐, 三日五射, 四日五驭, 五日六书, 六日九数。(Bao is in charge of remonstrating emperor’s mistakes. One day, he was teaching the princess some statecraft. He taught him six things: the first is Wu-li, the second is Liu-yue, the third is Wu-she, the fourth is Wu-yu, the fifth is Liu-shu, and the sixth is Jiu-shu ) (Li, 2002). However, people at that time only knew Liu-shu refers to writing system, but no one identified it specially until Han Dynasty. A scholar called Xu Shen listed what Liu-shu is in his book, Shuowenjiezi. He theoretically explained how Chinese characters are developed and formed based on six principles. They are pictographic principle (象形理论), indicative principle (指事理论), associative principle (会意理论), pictographic-phonetic principle(形声理论), rebus (phonetic loan) principle (假借理论) and derivative principle (转注理论). The teacher- researcher explains each principle in detail in the following part.

First, the pictographic principle, Xu defines it in his book as “象形者，画成其物，随体诘诎，日月是也。” (Xu, 100AD). This principle means that this kind of characters are created according to the appearance of the real objects, like 日(sun) and 月(moon). Pictographs are considered to be the earliest characters formation
principle, which were first found on bones and shells. Luo et al (2013), most simple characters are simplified and stylised pictures.

Figure 2.3: Pictographic Chinese Characters

<table>
<thead>
<tr>
<th>Oracle Bone Script</th>
<th>Regular Script</th>
<th>Pinyin</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>日</td>
<td>日</td>
<td>Ri</td>
<td>Sun</td>
</tr>
<tr>
<td>月</td>
<td>月</td>
<td>Yue</td>
<td>Moon</td>
</tr>
<tr>
<td>山</td>
<td>山</td>
<td>Shan</td>
<td>Mountain</td>
</tr>
<tr>
<td>木</td>
<td>木</td>
<td>Mu</td>
<td>Wood</td>
</tr>
</tbody>
</table>


However, as time goes by, especially since Chinese government carried out the policy of simplifying the characters, the pictographic meaning of Chinese characters slowly disappears. Coulmas (1991) suggested that although historically many characters developed from pictographs, that evolution to symbols reduced their complexity and decreased their degree of pictorial description. Xiao & Treiman (2012) put forward the character stylisation is an important reason. For example, the character 日 (sun). Without telling the real meaning, maybe no one will connect it with the sun, because sun is not square. Due to the reduction of iconicity, some scholars discuss this phenomenon. Luk & Bialystok (2005) define iconicity as the degree of visual similarity between a character and its referent, and offer this criterion

Second, indicative principle is defined as “指事者，视而可识，察而见意。上下是也”. (Xu, 100AD) This kind of characters can be easily understood through the form
of the characters, like 上 and 下, which means up and down respectively. Apart from the characters like 上 and 下, which clearly show the meaning by themselves, some indicative symbols can also represent the meaning. Like the character 本, which means root, adds a horizontal stroke at the foot of the character 木 (wood). This horizontal is an indicative symbol, which indicates something at the foot of a tree. That is the root. It is comparatively more abstract than pictographs, but it is quite common.

Third, associative compounds have the definition that “会意者，比类合谊，以见指伪，武信是也”. (Xu, 100AD) It means that two or more than two pictographs or pictographic radicals are combined together and the meaning is inferred from the relationship of them. The character ‘从’ is a typical associative compound, which means follow. There are two radicals make up this character, ‘人’, which means person in Chinese. Thus one person coming after another represents following.

Fourth it comes to the pictographic-phonetic compound ideograms, which can also be seen in English words. Xu Shen defines it as “形声者，以事为名，取譬相成，江河是也”. (Xu, 100AD). This kind of characters are always composed of two parts, one pictographic part represents the meaning while the other one shows the pronunciation. 江 (large river) is an associative compound which has the pictographic radical in the left which means water and phonetic part in the right side. However, as time goes by, some pronunciations change thus. According to Zhu (1987), due to the evolution of Chinese language, even though the majority of Chinese compound characters carry phonetic cues, only about 26% of them are actually pronounced like their phonetic radicals (Sung & Wu, 2011). Thus this principle may fit some situations. But it is actually the most productive way of creating Chinese characters. In Shuowenjiezi, there are 9353 characters in total, among which there are 7697 pictographic-phonetic compound ideograms which take up more than 80%.

The last two are rebus (phonetic loan) characters and derivative cognates. Rebus characters represent the characters that are "borrowed" to write another homophonous or near-homophonous morpheme. Derivative cognates are the ones that come from the other, like turning around the character or changing the tones.
These two principles are not as important as another four, and derivative cognate is actually no more used in the modern time.

In conclusion, with the help of Liu-shu theory, the features of character’s form-meaning connection can be synthesized. For the pictographic Chinese characters, the characters’ meanings can be realised by understanding and analysing the shapes of the characters because these characters are picturing the appearances of the objects in the real world. For the indicative characters, the meaning can be understood by analysing the indicative symbols, which are either the strokes added at the basis of pictographic characters, or the characters themselves. For the associative compounds, the meaning can be analysed through understanding the relationship among different components in the character. Last but not least, if the character belongs to pictographic-phonetic compound, its general meaning can be found out from the character’s radical, while the other part would indicate the character’s pronunciation.

2.3 Teaching Chinese Characters with Liu-shu Theory

This part introduces the possibility of teaching Chinese characters with the help of Liu-shu theory. It should be paid attention that the literatures introduced below may not mention exactly the name of Liu-shu theory, but the way they use is actually a part of Liu-shu theory.

2.3.1 Using Liu-shu Theory in Teaching Chinese as L1 Language

Liu-shu theory is widely regarded as the main way for the creation of Chinese characters in China. Thus there are actually some scholars studying the application of Liu-shu theory in teaching Chinese characters for students who learn Chinese as L1.

Tse et al. (2002) developed a new method of teaching Chinese characters using Liu-shu called integrative perceptual approach. The passage first went over some major ways of teaching Chinese characters in China, like teaching by phonic systems,
emphasizing the meaning of the characters, emphasizing the use of character clusters and explicit instruction on the structure and form of characters. But they realized that all these methods had their own shortcomings and limitations, thus none of them had been adopted widely across the country. After realizing that, the author was devoted to the development of a method called integrative perceptual approach. In this method, spoken language was taken as the starting point and the material that students had already learned in school, kindergarten and at home was always taken as the major teaching material, especially nursery rhyme, which was interesting and also has existed in children’s prior knowledge. The method also had a major focus on using realistic and meaningful language contexts to teach characters. The lesson often started with an interesting context that the text provides. Through this method, students’ ability of learning Chinese characters was greatly improved. The teachers and parents who were interviewed considered that the pupils involved in the new approach developed a better sense of character structure compared to those who only learnt by the stroke-by-stroke teaching strategies (Tse et al., 2007).

Huo (2009) also suggests teaching Chinese characters with Liu-shu Theory. She analyzes the importance and feasibilities from three aspects. She first analyzes that even though thousands of years have passed by, Liu-shu theory remains as the major Chinese characters formation principle. Liu-shu theory well displays the fundamental character: ideogram expression. Second, children always pay attention to the big picture of characters, turn to the detailed parts. Thus it is very important to make students be sensitive about characters. For example, when teaching the character 燕 (swallow), teachers can show swallow’s picture at the beginning to give students a rough impression of the character and make link between them, like the 卍 is swallow’s head, 日 is the body, 北 becomes the wings and 火 is the tail. Last but not the least, students in year 3 to year 5 can learn characters by themselves with their prior knowledge of radicals. But what teachers should do is adding more explanation to the characters’ rationality and also categorization. It becomes quite obvious how important it is to teach Chinese characters.

Jia (1998) also strongly argued that Chinese characters should be taught through explaining the principle of character formation. It concentrated on the relationship between sound, formation with meaning. Specifically Liu-shu theory should be
employed to teach characters through combining the form of characters (e.g. pictographic words) and the meaning.

### 2.3.2 Using Liu-shu Theory in Teaching Chinese as Foreign Language

Compared with using Liu-shu theory in teaching Chinese characters as the first language, there are actually more studies focusing on exploring methods of teaching Chinese characters to non-Chinese background students with the help of Liu-shu theory.

Taft & Chung (1999) focus on testing the efficacy of using radicals in teaching Chinese characters. In their paper, the authors first introduce some basic knowledge of Chinese characters. Characters are composed of radicals and radicals are composed of stroke. However, since strokes have no meaning separately, radicals are taken as the research focus. In the study, four groups of Australian subjects who knew nothing about Chinese were asked to learn 24 character/meaning pairs all of which are composed of two radicals. Four groups are divided as ‘radicals before group’, ‘radicals early group’, ‘radicals late group’ and ‘no radical group’. The first three groups are given the knowledge of radicals at different time – ‘before the test’, ‘the first presentation of the stimuli’ and ‘the third presentation of the stimuli’, while the last group is given no knowledge of radicals. After carrying out the research, it was found that memory for the character-meaning pairings was best for the Radicals Early group, suggesting that it is important to highlight the radicals when a character is first presented to the learner (Taft & Chung, 1999). Zhao & Jiang (2002) also argue that radicals imply the category of Chinese characters and are quite helpful in helping students remember Chinese characters more systematically.

A website established by The Le@ning Federation, called The Cracking the Code Character Catalogue (Scrimgeour, 2012) shows a good example of Chinese character learning. It emphasises on using radicals to learn Chinese characters. This website encourages learners to explore the character system by providing access to structural and functional information on any character they encounter at any time in their learning (Scrimgeour, 2012). The Character Catalogue provides all relevant
information on the form, structure and internal function of most characters, so learners begin to learn characters by association rather in isolation. As introduced by Scrimgeour (2012), there are in total three levels:

- Level 1 (Component Index): a core set of approximately 200 component parts are organized into groups according to their pictographic meaning, under that another 200 components are classified based on their similarity in form;
- Level 2 (Inter-character Analysis): each page displays a list of characters containing a common component organized according to the structural location of the component;
- Level 3 (Intra-character Analysis): an individual character is deconstructed into the small radicals. At the same time, the form, sound as well as meaning both for components and the whole character are all introduced.

Figure 2.4: Example of Component Index


Different from traditional way of teaching Chinese characters, which requires students to memorize the characters by rote learning, the Cracking the Code Character Catalogue puts more efforts in displaying the inter-character and
intracharacter connections. The website thus has the potential to enhance Chinese second language learner outcomes in character learning, and their metalinguistic abilities in reading and writing in Chinese (Scrimgeour, 2012).

Apart from using radicals, using visual pedagogy is also an important way of teaching Chinese to foreign learners. This is closely connected with the pictographs. Thus the pictographic characters like 日(sun), 月(moon), 山(mountain), 木(wood) are extremely suitable to adopt this method. Picture is a vital instrument that educators should pay attention to. Engagement with pictures has many benefits for children including supporting the development of knowledge acquisition and meaning making skills (Mantzicopoulos & Patrick, 2011). Xu (2009) strongly supported this way. She held the point of view that through showing the relationship between Chinese characters and images, the vivid picture is displayed to students. With that, students can deeply understand the meaning of characters. Yang & He (2010) also mentioned the using of pictographic ways. They said some pictographs were simple and interesting, which were extremely suitable to stimulate Chinese beginners’ interest in Chinese characters. However, it is undeniable that many Chinese characters have lost their original images because of simplification. Thus in teaching, extreme attention should be paid to selecting the most suitable ways.

Some scholars suggest that Mandarin teachers use Liu-shu principles, especially the indicatives and associative compounds, to teach Chinese characters. For example, Ke (1998) examined the effects of language background on the learning of Chinese characters. This study chooses 85 bilingual speakers of English and Chinese and 60 native English-speaking learners from seven institutions. It is found that though language background is not a variable influencing either group’s performance on Chinese character recognition and production, sites cause huge difference for recognition and production. There are also some scholars using the story behind Chinese characters to attract students’ attention and arouse their interest. Mantzicopoulos & Patrick’s (2011) research shows the viewpoint that children learn best when instruction is based on story-like texts. The indicatives and associative compounds are best suitable for the story-tell way. Compared with pictographs, which simply simulate the image of real things, indicatives and associative compounds pay more focus on the relationship. Yang & He (2010):
2.3.3 Liu-shu Theory as Scaffolding

Liu-shu theory has been employed by Mandarin teachers to scaffold CFL learners. The concept of scaffolding is a vital concept in recent decade in second language teaching. It highlights one of the key aspects of children’s learning, namely that it is often “guided by others” (Stone 1998, cited from Pol, Volman & Beishuizen, 2010). As defined by Pol, Volman & Beishuizen (2010), the use of scaffolding as a metaphor within the domain of learning refers to the temporary support provided for the completion of a task that learners otherwise might not be able to complete. This support can be provided in a variety of manners that for example include modeling and the posing of questions for different subjects (e.g., science, social studies) at different ages. To make a successful scaffolding teaching, six actions should be taken into consideration:

- recruiting the [language learners’] attention,
- reducing degrees of freedom in the task in order to make it manageable,
- keeping direction in terms of the goals,
- marking critical features,
- controlling frustration, and
- modelling solutions (Guerrero & Villamil, 2013, p.52)

Recruiting the language learners’ interest should be listed as the first thing we should do. As the old Chinese saying goes, interest is the best teacher of study. It will be a good start to give students Chinese names and let them remember the Chinese
characters of their names. After raising students’ interest, it also would be important to direct students’ attention to some critical features of the language and give them restrictions of the freedom to stop them from creating knowledge randomly by students themselves, especially when students have some knowledge of how Chinese characters are formed through Liu-shu principles, they are quite likely to create some by themselves, which is definitely not permitted. In addition, students may be very enthusiastic and eager to learn. However it is also quite possible for them to lose interest when they realize that learning is getting harder. Thus controlling frustration becomes extremely important. For example, when teaching Chinese characters, it would be effective to relate the image of Chinese characters to something students familiar with in their daily life, like the character 七 (seven), teacher can explain it as an umbrella shape.

Successful scaffolding, using Liu-shu theory can be of great help to learning. This will particularly help students reduce their cognitive load. For instance, if teacher wants to teach the character “排 (volleyball)”, compared with asking students to remember it by rote, it would be better if teacher can explain more and do some relations. Teachers can say in the right part of the character, there are three horizontal lines in each side, which is like three people are playing volleyball on each side. With this explanation, students will definitely remember it more easily and thus their cognitive load is greatly reduced. Another scaffolding process, which is sometimes mentioned, is internalization of the support. The learner internalizes the support structure associated with the scaffolding and, in the end, teacher’s scaffolding is no longer needed as the learner can provide his or her own support” (Pol, Volman & Beishuizen, 2010). It is central to help students build up their internal way of studying. Thus they can learn by themselves even without teachers’ help. For example, once students are informed of the indicative principle of Liu-shu, they will be able to guess some unfamiliar characters’ meanings by themselves. If the radical 木 (wood) is taught, then students can guess the characters 林 and 森 must have some associations with wood, or some may guess these two may mean more wood. And that is true, 林 means jungle and 森 represents forest.

The literature review has demonstrated that Liu-shu theory has been employed in the teaching of Chinese language as L1 and L2. However, the testing of the theory in
teaching has “bits and pieces” characteristics and there hasn’t been systematic examination of it. Liu-shu theory after all is an ancient theory of language learning and it needs to be adapted to suit current language teaching. The following sections introduce some current L1/L2 transfer theories and dual-coding theories.

### 2.4 L1/L2 Transfer

L1/ L2 transfer is an important theory in education research. Much research has been done on the importance of the first language (L1) or the application of L1 in learning the second language (L2) during the decades, which can go back at least to Lado (1957) (Grütter, Lieberman & Gualmini, 2010, p. 128). However, the influence of L1 on L2 is far from being solved. In fact, different scholars even have different results. Some researchers come to a conclusion that L1 has a negative effect on L2 acquisition. For example, Rintell (1984) did a research at the phonological level. He found that Chinese learners have special difficulty in identifying the English native speaker's English because Chinese learners tend to understand the English with Chinese way. Li (2002) studied the learning of English syntax, in which Chinese is regarded as the L1 while English as L2. He also found L1 has negative effect on L2 learning. Though L1 may help L2 in some parts, like the study of reflexive, because they have the same word form, L1 plays a negative role in the learning of L2 in the whole. He found that L2 learners often transferred their L2 writings with the convention of L1. However, there are more scholars holding the view that L1 and L2 should be linked closely and L1 has positive effect on L2 learning. Cummins (2008) are strongly against the assumption that L1 and L2 should be taught separately and believes it is necessary to relate to students’ prior knowledge. When we free ourselves from exclusive reliance on monolingual instructional approaches, a wide variety of opportunities arise for teaching bilingual students by means of bilingual instructional strategies that acknowledge the reality of, and strongly promote, cross-language transfer (Cummins, 2008, p.65). Rias & Zaman (2013) both agree using students’ prior knowledge is helpful for students with limited knowledge. Using L1 to teach L2 will enable us to have more teaching possibilities. For example, the cognition between L1 and L2 can help learners better memorize knowledge and erase anxiety. When teaching the Chinese character, 木, it is actually so much like
the real tree and it is quite easy for students to remember the character if students can link their prior knowledge of real trees to this character.

In addition, Cummins (2008) also put forward the view that more focus should be put on the similarity and difference between L1 and L2 (p. 72). When a student started to learn new language, he would use his L1 unconsciously to help him remember the new knowledge, and pay special attention to the similarities. For example, when a CSL (Chinese as Second Language) student read the word chocolate, the first word came to his mind must be “chocolate”, thus the pronunciation became obviously easy to him. What’s more, if L1 and L2 are in the same language family, they will have more familiar parts. Take English and French as an example; they both have the same word, “photo”, with the same meaning, but different pronunciations. After some basic knowledge of the target language, teacher needs to lead students to pay attention to differences. The word order is a big difference between Chinese and English. For example, Chinese people will say “你喜欢什么运动”, but English people can only say “What kind of sports do you like”. Focusing on the differences, learners can better remember the language knowledge and at the same time avoid making the mistakes of using L1 knowledge in L2, like saying “you like what sports.”

Cummins (2008) also puts forward five strategies of teaching L1/L2 transfer. Given that my sociolinguistic situation is to make Chinese learnable for beginning learners Anglophone speaking countries then I propose to investigate the following approaches to teaching for L1/L2 transfer:

- Transfer of meta-cognitive and metalinguistic strategies;
- Transfer of phonological awareness;
- Transfer of conceptual elements;
- Transfer of pragmatic aspects of language use;
- Transfer of specific linguistic elements; (p.69)

According to that, a variety of ways should be taken to teach L2 learners. For example, when teaching characters, teachers can tell stories about the formation of Chinese characters or ask student to colour in Chinese characters. After teaching several characters for one or two classes, mnemonic way could be used to help them
revise these characters. What’s more, specific linguistic elements should be emphasized, like explaining some separate parts of a language may help to understand. For example, in Chinese characters, 氵 means water, thus all the characters with 氵 would have connections with water, like 河 (river), 湖 (lake) or 海 (sea).

Sparks, Patton & Humbach (2009) investigated the relationship of first language (L1) skills in elementary school and second language (L2) learning in high school. They conclude that high-proficiency L2 learners exhibited stronger L1 skills and L2 aptitude than the average and low-proficiency L2 learners. Findings showed that L1 skills are closely related to L2 proficiency.

Upton (2001) chose 20 participants including 10 native speakers of Chinese and 10 native speakers of Japanese enrolled in a Midwestern U.S. University. This study mainly focuses on finding out the answers of when L1 knowledge is used in L2 learning and what the effect L1 has on L2 acquisition. The result shows that the role of the L1 goes far beyond merely serving as a linguistic “decoder ring”. L1 was certainly turned on actively used by L2 learners in L2 learning. L2 learners used their L1 to help them wrestle with word- and sentence-level problems, confirm comprehension, predict text structure and content, as well as monitor text characteristics and reading behavior. The L1 quite naturally served as a tool to help students develop their second language in every respect (Upton, 2001, p.491).

All in all, L1/ L2 transfer theory is actually a very useful theory in language teaching. Proper use of L1 knowledge can help students learn second language in all the aspects. However, L1/L2 transfer theory is explored mostly at a theoretical level. It hasn’t been tested systematically in second language teaching, especially in the teaching of two distant languages such as English L1 and Chinese L2, which do not belong to the same language family. Thus in applying the L1/ L2 theory in teaching, it would be modified due to the actual situation.

2.5 Dual Coding Theory

Dual coding theory is an important theory put forward by Paivio (1986). According to Paivio (1986), the human brain is made up of two subsystems: verbal and visual.
The visual subsystem stores the information that is comparatively more concrete, like sounds, images and feelings while the verbal subsystem mainly stocks moderately abstract information, like language. These two subsystems are independent, but the best teaching effect can be achieved when visual and verbal coding happens together. Also, information is better coded when dual rather than single coding takes place because if one memory track is lost, the other still remains. Thus even if students lose the image provided, they can still rely on their impression about the verbal memory to recall the character and its meaning.

Test is also carried out about the effectiveness of self-generated mnemonics and teacher-supplied mnemonics. Kuo & Hooper (2004) suggested that students using a self-generated visual mnemonic outperformed those using a supplied mnemonic. Bower (1970) instructed subjects either to imagine a visual interaction between two words in a pair or to create a sentence with each pair of words. He found that the visual self-generative condition produced the best recall of word pairs. Also since self-mnemonic involves students’ imagination, it can help better class engagement. Mantyla & Nillson’s (1983) found students involving their own mnemonic outperform who use supplied mnemonics. Samuel Reed (2014) proposed that the rules for engagement require that students use their imagination. Lamborn & Wehlage (1992) suggest that engagement in class is vital for students’ effective learning, especially for young learners. Mantzicopoulos & Patrick (2011) agree that interest and appreciation of the subject are two important indexes of engagement that are related to actual activity choice and participation.

However, it is realized that self-generative mnemonics doesn't outperform teacher-supplied mnemonics the whole time. Kuo & Hopper (2004) concluded that creating effective mnemonics might require considerable effort and creativity. Kibler & Blick (1972) also suggested that if the learner was too young or the task was too difficult, then for the learners themselves discovering an appropriate mnemonic would be challenging.

2.6 Limitations in Current Literature

This chapter reviews the content that may be useful for the study. It mainly contains five parts: a brief introduction of Chinese characters, a brief introduction of Liu-shu
theory, the teaching strategies of teaching Chinese characters with Liu-shu theory, an introduction of L1/ L2 transfer theory and an introduction of dual- coding theory.

So far, using Liu-shu in teaching Chinese as first and second/foreign language has been partly investigated with the feature of bits and pieces (e.g. pictographs, indicatives and associative compounds). However, there has been no systematic study and testing on the other aspects of theory (e.g. pictographic-phonetics, rebus/phonetic loan characters and derivative cognates). There have been quite a few L1/L2 transfer theories in the West, but there is no in-depth research into how and what of these theories can be employed, through combining Liu-shu, in Chinese character teaching to CFL students in the West. In this study the research question is raised as: How can Liu-Shu, the Chinese language learning theory, be combined with Western L1/L2 transfer theories as well as dual- coding theories, and developed into a pedagogical framework to be employed in teaching Australian students in their Mandarin class?
Chapter 3 Research Methodology and Methods

3.0 Introduction

This chapter introduces the methodology employed in this study. It covers the research philosophy and the rationale of the methodology chosen, the study design, including the study site, the participants, data collection and analysis, research principles including research triangulation, generalizability and the ethics issues.

The main research question for this research is:

- How can Liu-shu, the Chinese language learning theory, be combined with Western L1/L2 transfer theories and developed into a pedagogical framework to be employed in teaching Australian students in their Mandarin class?

And the contributory research questions are:

- What is Liu-shu theory and how has it been used in teaching Chinese as first language and second/foreign language?

- Is traditional Liu-shu theory suitable for teaching Chinese character to Australian beginning learners in Australian schools?

- What strategies of Chinese character teaching could be developed and employed in teaching Australian students in their Mandarin class?

3.1 Teacher-research

This research focuses on exploring a suitable framework for teaching Chinese characters for Australian school students in their Mandarin classes. The main data source was from the teacher- researcher’s teaching experience, intuition as well as
questions raised from her teaching. Thus teacher-research is chosen as the philosophy of doing this research. When it comes to detailed design, action research is employed to depict.

Teacher-research is regarded as a qualitative research relying on people’s intuition, experience, understanding as well as personal attitude. In the most recent publishing books, Denzin & Lincoln offer an ‘initial, generic definition’ for qualitative research.

Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them. (Denzin & Lincoln, 1994, cited in Flick, 2007, p.3)

Teacher-research has several characteristics: interpretive, experiential, situational and personalistic (Stake, 2010, p.15). By interpretive, it means that it can be explained and understood by different people in different ways. Multiformity is welcomed in qualitative study. By experiential it means action researchers take part in when they observe (in participant observation) or make participants reflect their life in this context the teacher researcher’s life as a teacher and research candidate (Flick, 2007, p.8). As a teacher-researcher, it is sure that she works as part of the research because she collects the data through her teaching. Apart from that, ‘experiential’ also means that qualitative researchers strive to be naturalistic, to neither intervene nor arrange in order to get data (Stake, 2010, p.15). As for ‘situational’, it makes the point that different places and different time will make the outcome of teacher-research different. Thus qualitative research cannot be generalized, but vary in different situations. And the personality character expresses the meaning that different people may vary the result because of their diverse understandings and attitudes. So uniqueness is what qualitative research seeks for. All in all, teacher-research is still based on specific attitudes – of openness towards who and what is studied, of flexibility in approaching a field and moving in it, of understanding a subject's or a field's structure rather than of projecting a structure into what is studied, and so on (Flick, 2007, p.14).
3.2 Research Strategies

This study is designed as an action research. Action research is a form of self-reflective inquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which the practices are carried out (Carr & Kemmis, 1986, p.162). In terms of the specific procedure, there are four important moments: planning, acting, observing, and reflecting, which form a spiral circle (Carr & Kemmis, 1986, p.162). At the very beginning, the teacher-researcher planned her teaching according to the prior knowledge through literature review on Liu-shu’s employment in Chinese teaching as well as other Western L1/L2 transfer theories and dual-coding theory. In executing the plan, the researcher found out some shortages and advantages, with which, the researcher improved the plan. The new plan then carried out again. New advantages and disadvantages expect to be explored. After repeating this circle, the teacher-researcher kept finding the bad and good places of the plan and that’s how the action research is increasingly perfected.

Figure 3.1: The Moments of Action Research

There are several reasons why the teacher-researcher chose action research. First of all, action research has a distinct goal, which is to influence or modify the attention of the research (Robson, 2007, p.215). There are two things that are considered to be vital to action research: improvement and involvement. Action research aims at improvement at three areas: firstly, the improvement of a practice; secondly, the improvement if the understanding of the practice by its practitioner; and thirdly the improvement of the situation in which the practice takes place (Carr & Kemmis, 1986, p.165). They are exactly fit for this research. This research developed a suitable framework for teaching Chinese characters to Australian school students,
which helps to improve the teaching quality, at least in teaching Chinese characters. Definitely, in the process, the teacher-researcher’s teaching standard as well as the Mandarin-teaching conditions was advanced. When actual educational practices, understanding of the educational process as well as the situation are all improved, the action research then can be viewed as successful (Carr & Kemmis, 1986, p.175).

Secondly, action research pays extra attention to collaboration. According to Robson (2007), collaboration between researchers and those who are the focus of the research, and their participation in the process, are typically seen as the central to action research (p.126). Students and classroom teachers were also important parts who were the major two resources to get feedback from to perfect the research. In order to better carry out the research, setting plans and having discussions with teachers and students were necessary.

All in all, in order to carry out action research successfully, three requirements are essential: firstly, the plan must be regarded as a social practice and aims at improving. Secondly, the project must undergo a spiral circle of planning, acting, observing, and reflecting. Finally, the project must try to improve and widen every one’s participation in the process of carrying out the research. (Carr & Kemmis, 1986, p.166)

Action research is thought to be a spiral circle. After carrying out action and observing, the plan can be better perfected.

3.3 The Principles of Research

In this section, the principles the teacher-researcher followed in carrying out the research are introduced. It includes triangulation, generalisation and other ethics issues. Following these principles, the research was accomplished successfully.

3.3.1 Triangulation

Triangulation as a keyword is used to name the combination of different methods, study groups, local and temporal settings, and different theoretical perspectives in dealing with a phenomenon (Flick, 2009, p.444). It also means that researchers take
different perspectives on an issue under study or in answering research questions (Flick, 2009, p.445). As distinguished by Denzin, there are four types of triangulation: data triangulation, investigator triangulation, theory triangulation and methodological triangulation (Flick, 2009, cited in Denzin, 1989b, 237-241). Exploring from different aspects of study can to some extent guarantee the quality as well as the reliability and validity of qualitative research.

More specifically, in this study, data triangulation and methodological triangulation were guaranteed. Data triangulation refers to the use of different data sources, which should be distinguished from the use of different methods for producing data (Flick, 2009, p.444). As the teacher-researcher stated in the beginning of data collection part, there were five kinds of data being collected: the researcher’s reflective journal, record of focus group interview with students, record of interviews with class teachers, surveys. Collecting data from different people helped to analyze from different angles, enriched the data and made it more convincible.

Methodological triangulation was also achieved in this research. Mainly four research methods were employed- focus group interview, individual interview, survey and self-reflective journal. Various research methods enabled the teacher-researcher to think from different perspectives and showed a clear picture of how the research was carried out.

3.3.2 Generalization

Generalization refers to “the extent to which findings from an investigation can be applied to other situations is determined by the people in those situations” (Merriam, 1995, p. 58). It is also an important element which must be taken into consideration in ensuring the reliability of the research.

However, the problem of generalization in teacher-research is that its statements are often made for a certain context or specific cases and based on analyses of relations, conditions, processes, ect. in them (Flick, 2009, p.407). It is quite true for this research. Because it is a study about teaching Chinese characters mainly conducted in a primary school of Western Sydney, there are certain elements that may limit the generalization. First since the research is largely intended for primary school students, it is not suitable for high school students or even adults. Secondly, the research
mainly focuses on Sydney primary school. For the primary school in other parts of Australia or even in other countries, the research may come across some limitations. In order to enhance generalization to its greatest extent, the author employed two strategies: firstly detailed description was provided about the case, so that readers could have a judgement whether the findings or conclusions derived from this study can be applied or transferred into other settings (Merriam, 1995, p.58). To do this, the researcher paid great effort to keep self-reflective journal and made it as detailed as possible. Secondly, comparison was made between this research and researches in other parts of the world through literature. In doing the research, the teacher-researcher read various documents from different places and different topics in this area.

### 3.3.3 Ethics Issues

Most of the participants in this research are stage three students, who are comparatively vulnerable. Thus the ethics issues concerning protecting students’ privacy were paid extra attention to during the whole process of this research.

First of all, the participants were informed the rough intent of the research in advance. As the interview’s discourse develops, it might seem to be advantageous to have disclosed beforehand the research intent in order to build trust and clarify for the interviewee the objectives of the research project (Qu & Dumay, 2011, p.253). Bloom & Crabtree (2006) also mentioned that interviewees should not be exploited for personal gain. It is important to build into the research plan a method of acknowledging the contributions that respondents make to the success of the research process and to reimburse them in various ways for their efforts (p.319). More importantly, the teacher-researcher guaranteed no harm to the participants. During the interview, the interviewee may share information that could jeopardise his or her position in a system. This information must remain anonymous and protected from those whose interests conflict with those of the interviewee (Bloom & Crabtree, 2006, p.319). As Bulmer (1982) suggests, “Identities, locations of individuals and places are concealed in published results, data collected are held in anonymised form, and all data are kept securely and confidentially” (p. 225, cited in Qu & Dumay, 2011, p.254).

This research severely followed the rules of ethics issues to guarantee the safety of
all the participants by taking into account their needs and interests.

### 3.4 Research Design

This part introduces the research design of this project. It includes the introduction of research sites, research participants as well as cycles implementation. With this section, a general picture of how to carry out the research can be seen.

#### 3.4.1 Research Sites: The School Context

In this part, the researcher focused on describing the research sites. It is very important to know the information about the school.

Each school has its own history, programmatic and behavioural regularities, role definitions, time perspective, culture and modal process of change. An understanding of these elements is a necessary precondition for studying educational change, the impact of an educational innovation, and classroom teaching and learning (Pine, 2009, p. 20).

To carry out this research, a primary school where the researcher involved volunteer teaching, was chosen as the primary research site, namely Rainbow Public School. Because of the ethical problems, the teacher-researcher used the pseudonym instead of its real name. The reason has already been explained in the ethical part.

Rainbow Primary School is a well-established school with more than 300 students, which enjoys a history of over 130 years. In total, it has 16 classes from kindergarten to year 6. With the efforts of previous volunteers, most of the students have some basic knowledge of Mandarin. For example, they can say nǐ hǎo (hello) to me in Mandarin the first time they saw me. Some students are even able to count from 1 to 20 in Mandarin.

#### 3.4.2 Research Participants and Sampling

The participants for this research include two classes from stage three (year 5 and year 6) in Rainbow Public School, 2 classroom teachers of these two classes and the researcher herself.
The students in two classes of Rainbow Public School are all second language learners. Every week they had Mandarin class for 45 minutes. Most of them had very basic Chinese knowledge, like how to say “hello” in Chinese and some could even count from 1 to 20.

The two classroom teachers were recruited to be the participants because they were required to sit in class to observe and assist classroom management while the teacher-researcher was teaching. As an observer and an experienced teacher they had their perspective of the teacher-researcher’s Mandarin teaching and was able to provide useful feedback for the researcher to collect and to improve her teaching.

In this action research, the teacher-researcher’s own reflections on her teaching also provide important information/evidence for her to answer the research questions around how a framework could be developed and used to teach students of Mandarin as second language.

3.4.3 Cycles Implementation

The research was conducted in two stage three classes in Rainbow Primary School with Liu-shu theory to make Chinese characters learnable. The whole teaching was implemented in strict accordance with the process of action research. There were in total two cycles in this research. Specifically, in cycle 1, the teacher-researcher examined the four principles in ancient Liu-shu theory. Concluding the advantages and disadvantages of the four principles in ancient Liu-shu theory, the teacher-researcher then put forward her own Chinese characters teaching methods. The benefits and limitations of the new methods were also concluded. Cycle 3 could also be conducted by putting forward new character teaching methods with the conclusion of cycle 2 in the future research.

- **Plan:** At the beginning of every term, the teacher-researcher decided a theme for the whole term and made a general but coherent term lesson plan, about the characters needed to be taught. In addition, before each lesson, the teacher-researcher also made a more detailed lesson plan.

- **Act:** the class was carried out according to the lesson plan the teacher-researcher had made.
• **Observe:** Observation was done during the classes and after classes. During the classes, the teacher-researcher paid attention to students’ engagement, students’ language as well as students’ reflection. All these were written down in the teacher-researcher’s self-reflective journals, which were kept after each class. In addition, at the end of the year, the teacher-researcher interviewed two class teachers individually and students in group. Surveys were also done to test students’ mastery degree of Chinese characters.

• **Reflect:** After each cycle, the teacher-researcher reread all the collected data, did some data analysis and concluded advantages as well as disadvantages of this cycle, which were taken as suggestions for improving the lesson plans of next cycle.

Figure 3.2 The Cycle Implementation

The diagram above vividly shows the cycles of this action research. After finishing one cycle, another cycle began on the basis of last one, and a better framework of teaching Chinese characters on the basis of Liu-shu theory was achieved.
3.5 Data Collection Procedures

This part focuses on data collection. Data are closely associated with the research questions and aim to answer the questions in a more strong way. This research focuses on exploring the way of developing and employing Liu-shu theory, the Chinese language learning theory in teaching Australian students in their Mandarin classes.

Data were collected from schools students through focus group, from classroom teachers through semi-structured interview and the researcher herself via self-reflective journals.

3.5.1 Interviews

Interviewing is a research method typically involving researcher asking questions and, hopefully, receiving answers from the people you are interviewing (Robson, 2007, p.269). The purpose of the teacher-research interview is to contribute to a body of knowledge that is conceptual and theoretical and is based on the meanings that life experiences hold for the interviewees (Bloom & Crabtree, 2006, p.315). Broadly, there are three kinds of interview: Fully structured interview, semi-structured interview and unstructured interviews. Fully structured interview has predetermined questions with fixed wording, usually in a pre-set order (Robson, 2007, p.270). It is thus straightforward to organize and quantify research. As for semi-structured interview, it involves prepared questioning guided by identified themes in a consistent and systematic manner interposed with probes designed to elicit more elaborate responses (Qu & Dumay, 2011, p.246). The semi-structured interview enjoys its popularity because it is flexible, accessible and intelligible and, more important, capable of disclosing important and often hidden facets of human and organizational behavior (Qu & Dumay, 2011, p.246). It is often regarded as the most efficient and convenient of carrying out qualitative research. Unstructured interview is non-standardized, open-ended and in-depth (Robson, 2007, p.270). Since it has comparatively high demand for skill of carrying out the interview and controlling the
topic, the research used the structured and semi-structured interview as the main way.

Specifically, there were in total three kinds of interview employed in this research, namely: focus group interview, individual interview as well survey interview. Focus group interview and survey interview will be carried out among stage three students in Rainbow Public School. And individual interview is the major method for class teachers.

![Figure 3.3 Interview Methods and Interviewees](image)

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<tr>
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<th>Stage One Students</th>
<th>Class teachers</th>
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<td>Focus Group Interview</td>
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<td>Individual Interview</td>
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### 3.5.1.1 Individual Interviews

The individual interview the research author performed in this research belongs to semi-structured research, which means that the teacher-researcher had the power of controlling the interview while the interviewee had enough space to answer and dig deep into the topic. Face-to-face interviews offer the possibility of modifying one’s line of enquiry, following up interesting responses and investigating underlying motives in a way that postal and other self-administered questionnaires cannot (Robson, 2007, p.273). The individual in-depth interview allows the interviewer to delve deeply into social and personal matters (Bloom & Crabtree, 2006, p.315).

Through carrying out the interview with classroom teachers, the researcher got their
feedbacks for the teacher-researcher’s Chinese lessons. There were two classroom teachers who were respectively sitting in the teacher researcher’s Mandarin class during her teaching. These classroom teachers’ task was to observe and help manage the class. They gave the teacher-researcher useful feedback. They were interviewed for 20 minutes at the end of the studying year. Through the interview, the researcher got some inspirations of creating better ways of teaching Chinese characters and made improvement for the following teaching.

3.5.1.2 Focus Group Interview

A focus group (sometimes referred to as a focus group interview - which emphasizes the fact that this is particular type of interview) is a group interview. It is an open-ended group discussion guided by the researcher (Robson, 2007, p.285). Each focus group represents a single entity within a sample of groups - it is not an interview with distinct individuals and is not a short cut for collecting data from several individuals at the same time (Robson, 2007, p.315). There were two groups of students from two stage-three classes recruited for focus group interview. One group has 7 students and the other group has 8 students.

There were several reasons why I chose this data collection method. First of all, since the students for this research are mainly stage three students, who are comparatively young, they had a sense of fear when facing teacher alone. What’s more, it was over-demanding if the teacher-researcher expected a single student could fully express his/her feeling because of their ages. However, if together with their friends, they had a sense of familiarity, which helped them reduce the mental load. In addition, participants are empowered and able to make comments in their own words, while being stimulated by thoughts and comments of others in the group (Robson, 2007, p.285). Secondly, it was time-consuming and energy-consuming if the researcher wanted to interview students one by one. Convenience and time savings is another advantage of focus groups for both interviewers and interviewees (Qu & Dumay, 2011, p.243). The last point the researcher wants to mention is that some children are quite sensitive and they are very likely to feel unjust if they had not been interviewed. Because the researcher took a less active role in guiding the discussion, less bias was introduced by the researcher than in individual interviews (Qu &
3.5.1.3 Survey Interview

In order to get more straightforward and visualized data, survey was also employed as a supplementary. Survey interview is effectively a questionnaire with fixed questions in a pre-decided order and standardized wording, where responses to most of the questions have to be selected from a small list of alternatives (Robson, 2007, p.269). The teacher-researcher gave students the survey, or feedback, to examine whether her teaching based on the components of Liu-shu theory, L1/L2 transfer theories and dual-coding theory, are effective in her Chinese teaching through students’ feedback.

3.5.2 Self-reflective Journal

Apart from interview, self-reflective journal was also taken as a vital way of collecting data. Being a central part of the class, the teacher-researcher collected several different kinds of data. Keeping self-reflective journal was considered to be the best way of keeping all the data. What’s more, keeping journals can help surface the teacher-researcher’s own methodological tendencies over time. The researcher may not have been aware of such tendencies, but acknowledging them may lead to useful thoughts about how to approach the later analysis (Yin, 2011). It was especially useful in action research because the action research is a spiral circle and aims at improving the teacher researcher’s professional quality.

My self-reflective journal included the observation of students’ reaction and reflection towards the class; the teacher-researcher’s own thoughts and feelings about the lesson plan; some important points, like when students got confused, became noisy or showed special interest; class teacher’s reflection and also some good ideas. However, the biggest problem for self-reflective journal is that it is difficult to keep “subjective” feelings and “objective” facts completely separate from each other because, while keeping field notes, researchers invariably apply their “subjective” judgment and interpretation, while recording their emotions, they may document situations objectively (Chang, 2008, 95-96). Thus when writing self-reflective journal, the teacher-researcher tried her best to keep it objective and
detailed. The teacher-researcher kept reflective journal after each lesson.

3.6 Data Analysis

In this section, the data analysis is introduced. There are two types of data analysing methods used in this research: thematic analysis and quantitative analysis. Thematic analysis is used as the main method, while quantitative analysis as assistant.

3.6.1 Thematic Analysis

Data analysis is an indispensable part of the whole research. It is data analysis that makes the data useful and beneficial to the whole paper. The data were mainly collected through the teacher-researcher’s teaching as well as interviewing. Thus the main forms of the data were the researcher’s reflective journal and records of interview and discussion. Because of the various kinds of data collected, the teacher-researcher first read through and got familiar with the data, and then conducted coding, categorizing, interpreting and conceptualizing it.

Figure 3.4 The Steps of Data Analysis

The first step of data analysis was reading through all the data to get familiar with them and to know all as a whole. Krathwohl advises that “the first time you sit down to read your data is the only time you come to that particular set fresh” (1988, p.309). Questions like what the interview and the self-reflective journals were about, what kind of information the teacher-researcher wanted to get from the data, what could the data contribute to solve the research question, were kept asking during the process. When reading the data, comments were made in the margin of the script.

After that, the second step was taken, coding. As the researcher’s question is to develop a pedagogical framework to be employed in teaching Australian students in their Mandarin class. Open coding is the most suitable way for exploring the effectiveness of the character teaching methods and strategies. Data are first
disentangled (“segmented”). When disentangling the data, careful reading was done over and over again to get deep understanding of the data and made sure that no key information was missed. In reading, important segment was highlighted and labeled. And comments were added to each segment to make it easier to understand.

After that, categorization was carried out to put segments with similar labels together. For examples, codes such as teaching characters using pictographic principle, or teaching characters using indicatives principle were put into the same category:

word formation of Liu-shu theory.

After putting similar codes in the same category, the final step was taken, namely “theme”. A theme is an abstract entity that brings meaning and identity to a recurrent experience and its variant manifestations. As such, a theme captures and unifies the nature or basis of the experience into a meaningful whole (DeSantis & Ugarriza, 2000, p. 362). Themes were generated according to the categories’ similarities, relationships, contradictions and so on.

The process of conceptualization is the developing theories through a process of abstraction (Flick, 2009, p. 307). This involved the teacher-researcher comparing the specific concepts developed from the data and generic concepts related from the literature the researcher reviewed, and elaborated the relations between the specific concepts and generic concepts to eventually contribute to the development of a pedagogical framework of Chinese character teaching.

### 3.6.2 Quantitative Analysis

Apart from the ways stated above, quantitative analysis was also used in the research to vividly show the result of the survey interview. Particularly percentage was used in the analysis to avoid some problems in qualitative analysis, such as overemphasizing vivid accounts of the experiences, putting too little weight on data that did not fit the theme the researcher wanted to generate, and averaging the outliers in the findings (Beck, 2003). After collecting the survey from survey interview, the teacher-researcher counted numbers for each option in the survey and calculated the percentage for each question. Thus the effect of each Chinese character teaching method was examined with high credibility.
In conclusion, to better carry out the research, thematic analysis is designed as the main data analysis tool accompanied with statistical analysis.
Chapter 4 Teaching with Liu-shu theory

4.0 Introduction

The previous chapter illustrated and reported the research methodology. This chapter focuses on analysis of the data from the teacher researcher’s self-reflective journals, surveys from students, and interviews with classroom teachers and students. This aims to address the question “Is Liu-shu theory suitable for teaching Chinese characters in an Australian context? The six principles in Liu-shu theory were explored and examined in teaching Chinese characters in the teacher researcher’s Mandarin classes. They are pictographs, indicatives, associative compounds, phono-semantic compounds, derived characters and rebus characters (see chapter 2). This chapter includes six sections: (4.1) examining the pictographic principle in Characters teaching, (4.2) examining the indicative principle in Characters teaching, (4.3) examining the principle of associative compounds, (4.4) examining the principle of phono-semantic compounds, and (4.5) discussion of Liu-shu theory in Mandarin classes.

4.1 Pictographic Principle in Characters teaching

The pictographic principle is the first character-formation principle introduced in Liu-shu theory. According to Shuowenjiezi, pictographic principle is defined as ‘象形者，画成其物，随体诘诎，日月是也’.

It means words or characters formed based on the shapes of real objects. An example would be Chinese characters 日 (sun) and 月 (moon). These two characters were formed based on the shape of sun and moon. Pictographs are considered to be the earliest Chinese characters. Pictographic characters are the essential part of Chinese vocabulary. In the following two sections, successful and failed examples using pictographic principle in the teacher researcher’s teaching are analysed.
4.1.1 Successful Examples of Using the Pictographic Principle in Liu-shu Theory to Teach Chinese Characters

In order to verify the practicality of the pictograph principle, characters, which are classified into pictographs in Liu-shu theory, were tested. Given that the students involved were at stage two and three, simple characters were mainly selected. According to Luo et al (2013), most simple characters are simplified and stylised pictures. They are either pictographs originally created to resemble the objects they represent or ideographs, which are graphical representations of object ideas. The three simple characters picked are the body part words: 目, 耳, 口 (eye, ear, and mouth). The following is an excerpt from the teacher researcher’s reflective journals:

(I taught them the pronunciations of eye, ear and mouth in previous week.) In this lesson I first showed them the characters 眼 (eye), 耳 (ear) and 口 (mouth). I asked them ‘Do you still remember the meaning of this character?’ Presented with the characters and Pinyin, most of them called out ‘eye’. Then I showed them the character 目. I asked ‘Do you notice that this character is the left part of the character 眼? Look at this character and tell me what relationship it has with the meaning of eyes?’ A girl put her hand up and said: ‘Because if you turn the character around, it looks like an eye with an eyeball in it.’ Some students still felt confused and were curious to know. I showed them the character in my booklet and turned it around. Some of them yelled out: ‘Yeah! It is like an eye with an eyeball!’

Then it came to the second character, 耳 (ear). Like 眼 (eye), all the students could tell me the meaning of 耳. Then I asked them a similar question: ‘why does this character mean ear?’ A boy glared at it and said: ‘No, it doesn’t look like an ear.’ Then a girl sitting beside him said: ‘No, it does look like an ear. It looks like an ear with hair behind it, just as Miss Wu told us.’ The boy then said: ‘Oh, yeah. It does look like that.’

After that came the character 口. I suspected it would be a bit hard for the kids to figure out the meaning. However they got the meaning easily. I asked: ‘Does it look like a mouth?’ A girl answered: ‘Yes! And an open mouth!’ Then I again showed them the picture of a woman with her mouth open wide. Students laughed. (From the teacher-researcher’s reflective journals, Term 1, 2014 16/06 / 2014)

From students’ reflections and responses, two advantages of using pictographic principle are clear. One is that students’ learning burden is greatly reduced because they can understand character meaning by themselves, with a little support from the
teacher-researcher. Another advantage is students’ interest was also greatly enhanced. When students realised that the characters had a profound visual link with what they represented in real life, they were amazed and happy because they indeed found these Chinese characters were created based on the shape of the real objects, which is different from English.

The data demonstrate that the pictographic principle is effective in this situation. When being asked about the possible connection between a character and its meaning, most of students tried to build the image. Amazingly, for the characters 目 and 口, the students created the same images as those in Liu-shu theory without being offered any hints in advance. For the character 耳, to make it easier to understand, student added little extra explanation from her point of view, at the basis of original explanation from Liu-shu theory, but the difference was not a significant one. Thus it can be concluded that explanations from the pictographic principle in Liu-shu theory for these three characters are still appropriate and useful as methods for students to remember them. However, this raised the question whether the pictographic principle in Liu-shu theory is suitable for all pictographic characters, or only for some? The teacher-researcher continued to examine more characters to answer this question.

目(eye), 耳(ear), 口(mouth) explanations from Shuowenjiezi: According to Xu (100 AD), the explanation for character 目(eye) is ‘目，人眼。象形。重童子也。凡目之屬皆从目。’ (目 means person’s eyes. It is a pictographic character. It emphasises the eyeball. All the characters related to eyes have 目 as the radical). In Chinese bronze inscriptions, 目(eye) is written as 目, which is quite similar to the real eye. When it comes to seal script, people write a vertical version of it.

The character 耳(ear) has the similar story. Xu (100 AD) explained 耳(ear) as ‘耳，主听也。象形。凡耳之属皆从耳。’ (耳 is mainly responsible for listening. The shape of the character looks like an ear. All the characters related to ear use 耳 as the radical. ) In the Chinese bronze inscriptions, 耳(ear) is written as 耳, and it becomes straight and formal in seal script.
The last character about the body parts is 口 (mouth). Xu (100 AD) explained 口 as ‘口，人所以言食也。象形。凡口之属皆从口。’ (口 is mainly responsible for speaking and eating. The shape of the character looks like the mouth. All the characters related to mouth use 口 as the radical). The shape of this character doesn’t change a lot. In Chinese bronze inscriptions, it is written as 囂, which is like teeth in the mouth. In modern times, the character has evolved into a square, which looks like an open mouth.

4.1.2 Failed Examples of Using Pictographic Principle in Liu-shu Theory to Teach Chinese Characters

As written in last part, it has been verified that the pictographic principle in Liu-shu theory is appropriate for use as a method for learning characters 目 (eye), 耳 (ear), 口 (mouth). However according to Coulmas (1991), although historically many characters developed from pictographs, that evolution to symbols reduced their complexity and decreased their degree of pictorial description. Shu et al. (2003) reported that in a detailed analysis of 2570 characters introduced in Chinese elementary schools between Grades 1 and 6, only 9% were pictographic or associative, although 26% of the characters taught in Grade 1 had this visual transparency (Luk & Bialystok, 2005). All these reports make it worth questioning whether pictographic principle in Liu-shu theory is suitable for teaching all characters. In order to further examine the practicality of the pictographic principle in Liu-shu theory, more characters are examined.

Within the theme of teaching body parts, another pictographic character was planned to be taught: 身 (body). The teacher-researcher found herself struggling to teach this character with explanation from Shuowenjizi.

When I looked at the modern character, I could hardly link it with the image of human being’s body. There were too many meaningless horizontal lines in the character. I thought it would be too hard to ask students to make a correlation, when it was even too hard for myself to imagine. So I decided not to use the explanation from Liu-shu theory. (From the teacher-researcher’s self-reflective journals, 18/05/2014)
This is the process that the teacher-researcher struggled with teaching the character 身 (body) with explanation from *Shuowenjiezi*. According to Xu (100 AD), 身 (body) is given the explanation that “身，躬也。象人之身。凡身之属皆从身。” (身 means body. It looks like a human body. All characters related to the human body use 身 as the radical.). The oracle form is 孕, which is like a pregnant woman. So the oracle form back then can mean both body and pregnancy. As time passed, some horizontal lines are added to the character, and which are difficult to decide what they refer to. After that, 孕, which means pregnancy, is separated from the 身, and 身 meant body part only. It should be acknowledged that the oracle form of the character is quite similar to a pregnant woman. However because of the long history of this character, the modern shape has deviated too far from its original one. It is difficult for the teacher-researcher to visualise the character as a pregnant woman herself, let alone the students. Introducing how the image of the character evolved to the students was also considered. However, several nonsensical horizontal lines are added to it, which makes it difficult to explain to them. In this context, the teacher-researcher decided that the pictographic explanation from Liu-shu theory is not appropriate for teaching students this character，身.

水 (water), is considered to be a representative pictograph character. Like the characters 目 (eye), 耳 (ear), 口 (mouth), students were told the meaning of the new character when characters were first presented to them. Then they were asked about the relationship between the character and its meaning.

First of all I showed them the character 水 (water), and told them this character means water. After that, I then asked them why it meant water. Out of expectation, one student said it looked like a person with two arms waving, and the rest of the class agreed. (From the teacher-researcher’s reflective journals, 24/03/2014)

Before class, it was assumed that, just as character 耳 (ear), 目 (eye), 口 (mouth), students could easily find these relationships by themselves, it proved not to be the case. When they were presented with the character together with the meaning and were asked to make link between the character meaning and character form, some students obviously went too far. Though the image of a person with two arms waving may be a vivid way to describe what the character is like, it has nothing to do with its
meaning – water. Two main things can be exposed here. First, students are creative and imaginative, especially young ones, however they are quite likely to go astray. This will be further discussed in 5.1.2. The other thing exposed is that though the shape of the modern character 水 (water) is representative of a pictographic character, student cannot directly get the meaning by the character form. The image of a person with two arms waving indicates that the modern character form of 水 (water) is still quite different from what water is like in the students’ mind. The teacher’s further guidance is expected.

Then I showed them oracle 水, and asked whether it looks like water. Most of the students in class agreed. However, when I asked them whether it looks like the current character 水 (water), about one third of them said yes, while the rest of the class said no or showed no reaction. (From the teacher-researcher’s reflective journals, 24/03/2014)

According to Xu (100 AD), ‘水，准也。 北方之行。象众水并流，中有微阳之气也。 凡水之属皆从水。 ’(水, means water, which is flat. The shape of the character looks like the water flows together, and there is little yang in the middle. All the characters related to 水 use 水 as the radical). The oracle shape of the character for water is . Because of the modernisation of Chinese characters, all the dots are linked together into straight line and diagonal lines, and the shape turns into 水.

The students acknowledged that the oracle form is close to what flowing water looks like, which is in accordance with the explanation from Shuowenjiezi, the teacher-researcher thus expected students to have similar opinions about the modern character. However, from students’ reaction, only one third of them gave positive answer, while two thirds of them are not yet convinced. It can be seen that from the students’ point of view, the gap between the oracle form and the modern form is obvious. And because of the gap, even with the big resemblance between oracle character and real object, students found it hard to accept the character.

The data from the teacher-researcher’s self-reflective journal and the analysis show that whether the pictographic principle works well or not is very closely related to the visual similarity between the character and its meaning, which is given the term “iconicity”. Characters with high iconicity have higher success rate to be taught with
pictographic principle, while low iconicity characters have lower success rate. This will be discussed in detail in chapter 7.

4.2 Indicatives

In *Shuowenjiezi*, the indicative principle is the second Chinese character-formation principle introduced. It is explained as: “指示者，视而可识，察而见意，上下是也。” It means characters that easily identified and understood by intuition, just like 上 (up) and 下 (down). For indicative character, indicative symbol is an essential part.

There are two types of indicatives: one is the complete indicative, which means this kind of character is completely composed of indicative symbols, like 一 (one), 二 (two), 三 (three); the other type is the compound indicative, which adds an indicative symbol to the pictographs to indicate the meaning of the character, such as 木 (tree) and 本 (root). For this second type, the indicative symbol is always added to pictographs, and the meaning of indicative symbol can be understood based on the pictograph. In this part, the examination of the feasibility of using the principle in the teaching of Chinese characters will be examined, and then the advantages and disadvantages of indicatives will be discussed.

4.2.1 Successful Examples of Using the Indicative Principle in Liu-shu Theory to Teach Chinese Characters

The characters 一 (one), 二 (two), 三 (three), were first chosen as the examples of teaching indicative characters. These three characters were taught in the Chinese numbers class.

When teaching characters 一, 二, 三 (one, two, three), I wrote these three characters on white board and told students the meanings. I then asked them:” Why do you think these three characters mean one, two, three?” More than half of the students in class immediately raised their hands and gave me the answer clearly, “because the character one has one stroke, character two has two strokes and character three has three strokes.” They understood the meaning these characters wanted to express. (From the teacher- researcher’s self- reflective journals, 21/07/2014)

These three characters 一 (one), 二 (two), 三 (three) are three representative
indicative characters. All of them can be included with the complete indicatives, which means the whole character is an indicative symbol. It is easy to understand the meanings of the three characters because character 一 (one) is composed of a single horizontal line, character 二 (two) has two horizontal lines and character 三 (three) has three horizontal lines. In this case, using indicative principle from Liu-shu theory to teach these three characters can be considered a success. The short time between questions and answers as well as the accurate answers in class indicate that students straightforwardly comprehend what these characters are meant to express. The simplicity and strong symbolization of the three characters can be regarded as the reasons for the success.

Other examples of successfully using the indicative principle to teach indicative characters lie in the characters 本 (root) and 末 (treetop). In order to study whether this principle is applicable for teaching Chinese characters to students in Australian Mandarin class, these two characters were tested.

After teaching students the character 木 (tree), I decided to go further. I showed them the character 本 (root) first and told them that the character had something to do with the character we just learned, 木 (wood). ‘What do you think this character means?’ ‘Big tree’, ‘more trees’, ‘branches’, ‘a person under an umbrella’… It seemed to be hard for them to get on the right track, so I decided to give them some hints. ‘You actually went too far. Let me give you some clues. What is the bottom part of a tree?’ ‘Root.’ ‘Very good. We add a horizontal line at the bottom part of 木, which represents it is something at the bottom of a tree. What if we put a long horizontal at the top of a tree?’ Then I wrote the character 末 (treetop) at white board. ‘Before telling me the answer, think where the horizontal line is put and what it may represent?’ I picked a girl and she said the answer with little uncertainty: ‘The treetop?’ ‘Excellent. Good girl! You got the correct answer!’ (From the teacher-researcher’s self-reflective journals, 31/03/2014)

Different from characters 一 (one), 二 (two), 三 (three), the two characters discussed above belong to the indicative compound because they add additional horizontal lines as the indicative symbol to the pictographic character, 木 (tree). Shuowenjiezi gives clear explanations for them, 本 (root) is explained as ‘本，木下曰本。从木，一在其下。’ (本, the bottom part of 木 is 本. It uses 木 as its radical and adds the indicative symbol 一 at the bottom of 木.) The character 末 also has a similar explanation in the book: ‘末，木上曰末。从木，一在其上。’ (末, the top
part of 木 is called 末. It uses 木 as the radical and adds the indicative symbol ‘ － ‘ at the top of 木. )

The data from teacher- researcher’s self- reflective journal indicate that recognising and mastering the indicative rule of Chinese characters at the beginning by themselves would be a too big challenge for the students. Though told of the potential connection between 木(wood) and 本(root), they still barely work out the meaning. However, after generally grasping the rule through the learning of 本(root), students could successfully guess the meaning of 末(treetop). In this way, we can find mastering the indicative rule and putting it into use for indicative character is not difficult.

There are other obvious characters created according to the indicative rule, as it is one of the basic character-formation rules. For example, by putting a vertical line in the middle of a rectangle, we create the character 中 (middle), and by adding a dot at the diagonal line of the character 刀 (knife), we come to the character 刃, which means blade.

In conclusion, all the characters introduced above have clear indicative symbols, and their character meanings can be understood through their indicative symbols. For the characters, mastering the indicative principle and putting it into use are helpful for students in both comprehending new knowledge and revising previous knowledge, because the new characters’ meanings are built upon their old Chinese character knowledge with a certain rule. However in order to examine if the rule is useful for other indicative characters, more of them were examined.

4.2.2 Some Failed Example of Using the Indicative Principle in Liu-shu Theory to Teach Chinese Characters

In last part, the teacher-researcher introduced some successful examples of using the indicative principle in Liu-shu theory to teach indicative characters. It can be appreciated that the indicative principle is truly beneficial for Australian students in learning Chinese characters in both comprehending knowledge and revising old
knowledge. However, does this principle work for all the indicative characters? In order to answer the question, the teacher-researcher explored more characters.

五 (five), 七 (seven), are also two indicative characters. So like characters 一 (one), 二 (two), 三 (three), the teacher-researcher also looked them up in Shuowenjiezi, hoping to find useful explanations.

In preparing the lessons for teaching 五 (five) and 七 (seven), I looked them up in Shuowenjiezi, hoping I can use the explanations from Shuowenjiezi, just as teaching 一 (one), 二 (two), 三 (three). However, when I read the explanation, I found that even I could barely understand them. Thus I decided to give up referring ideas from Shuowenjiezi, and to use other methods to explain instead. (From the teacher-researcher’s self-reflective journals, 25/07/2014)

From the teacher-researcher’s reflective journal, it can be seen that she chose to give up using the explanations from Liu-shu theory to teach these two characters because of the complexity and irrelevance to students’ prior knowledge of the explanations. Yin (an ancient Chinese philosophical concept) and Yang (the antonym of yin, another ancient Chinese philosophical concept) appear a lot in the explanations. As a Chinese-background speaker, and with basic knowledge of ancient Chinese philosophy, the teacher-researcher understood that Xu Shen (100 AD) explained these two characters according to ancient Chinese people’s understanding of the harmony of heaven and earth. However, discussing philosophy—especially Chinese philosophy, which is very different from western culture—is considered too tough for stage 2 and stage 3 students. A lot of extra explanations are needed to make students understand. Therefore, teaching in this way would only bring extra learning burden to them and may cause some to lose confidence when they find it too hard to understand.

Compared with characters 一 (one), 二 (two), 三 (three), 本 (root), 末 (treetop), the indicative symbols of characters 五 (five) and 七 (seven) are no longer so easy to distinguish. Indicative symbols can no longer tell the character meanings. The indicative rule is thus not appropriate to be used to explain these two characters. Therefore, other methods are considered to teach these two characters.

五 (five) and 七 (seven) explanations from Shuowenjiezi:
五 (five): ‘五，五行也。从二，阴阳在天地间交午也。凡五之属皆从五。’ (五，represents the five elements in the world, which are metal, wood, water, fire and earth. 五 uses 二 as the word root. 二 means heaven and earth. By adding a turned 又 in the middle, the character 五 means the intersect of yin and yang).

七 (seven): ‘七，阳之正也。从一，微阴从中斜出也。凡七之属皆从七。’ (七, is the positive number of Yang. It uses 一 as the word root. 一 represents Yang. The tick shows little Yin comes out.)

4.3 Associative Compounds

The associative compound principle is also an important character-formation theory. In Shuowenjiezi, the principle is explained as: ‘会意者，比类合宜，以见指㧑，武信是也。’ It refers to the characters which are composed of two or more than two simple characters and the relationship among the simple characters is used to represent the character meaning, just like characters 武 (military) and 信 (trust). Associative principle is very efficient in creating characters. Xu (100AD) estimated that 1254 characters fell into this category, occupying 13.4% of total character compounds, largely outnumbering pictographs and indicatives. One is it can express many abstract meanings that pictographs and indicatives cannot. For example, the character, 囚, puts 人 (person) in a square to express the meaning ‘imprison’, and the character, 明, puts 日 (sun) and 月 (moon) together to express the meaning ‘brightness’ which indicates that ancient people believed sun and moon together brought brightness to the world. The meanings of ‘imprison’ and ‘brightness’ are abstract and can hardly be expressed simply by pictographs and indicatives.

Associative compounds in this part were analysed according to two categories: consistent associative compound and variant associative compound. The consistent associative compounds are the ones that have same components, while the variant associative compounds are the ones that have different components. The successful examples and failed examples explain some possible reasons why associative principle works or not for teaching Chinese characters to Australian students.
4.3.1 Successful Examples of Using the Associative Principle in Liu-shu Theory to Teach Chinese Characters

The first associative compounds to be examined are two typical consistent associative compounds: 林 (forest) and 森 (jungle)

After teaching the simple character 木 (wood) as well as two derived indicative compounds 本 (root) and 末 (treetop) (refer to the self-reflective journal in 4.2.2), I decided to teach them two more associative compounds. First I asked students: ‘One 木 means a tree, what about 林, which puts two trees together?’ Students’ answers were various at beginning: ‘two trees’, ‘trees around’; ‘a lot of trees.’ I kept asking: ‘Very good. What is the word for lots of trees?’ Students answered loudly: ‘Forest!’ That was exactly the answer I wanted. I said: ‘Very good. 林 means forest, then what about 森? I put three 木 together.’ Students yelled out: ‘Bigger forest’, ‘more trees’, ‘jungle!’ ‘Very good, everyone. Three 木 s together mean jungle.’ Students seemed to handle the rule well and wanted to go even further. Students asked: ‘what about four trees?’ Since there is no character composed of four 木, then I said: ‘That’s a very good question. But there are no ‘four tree’ character. Most of the time three is the biggest number of components for Chinese characters, but very good guessing.’ (From the teacher-researcher’s self-reflective journals, 31/03/2014)

The example here is closely related with the ‘本’ (root) and ‘末’ (treetop) example in 4.2.2. Students were not able to work out the meaning when they had no idea of the rule for this kind of character. They had to keep guessing at the beginning. However, after being given the example, showing the rule of how the characters are formed, they could manage the rule and determine the meanings of other characters. The role of the rule for consistent associative compounds could be described by the Chinese idiom, 举一反三 (jǔ yī fǎn sān), which means drawing inferences about other cases from one instance. As mentioned in 4.2.2, students’ learning load can be largely reduced after handling the rule. In addition, at the end of this self-reflective journal, a student even put forward a relatively rational question by himself, suggesting his interest in learning this Chinese character was increased and he was curious to know more.
The graph above shows students' accuracy rate in tests for their memory of characters 木 (wood), 林 (forest), 森 (jungle). As we can see, for all three of them, the accuracy rates are over 0.8, which means at least 8 out of 10 students being able to answer meanings correctly. Giving students' ages, the effects of using the associative principle to teach characters 林 (forest) and 森 (jungle) can be considered ideal.

Giving detailed explanations for the data from the self-reflective journal, the principle works quite well for the consistent associative compounds, for two reasons. One is that the components of the consistent associative compounds are mostly simple pictographs, such as 众 (many), 品 (taste), and 林 (forest). With students' previous Chinese character knowledge, it is easy for students to understand and remember the single part, which means they actually know the whole character. The other reason is that these relations are always easier to figure out.

For the variant associative compounds, the character 生 (birth & growing) was chosen as the example. 生 (birth & growing) is a polysemous character. It can mean ‘giving birth’, ‘growing’, ‘survival’ or even ‘unripe’. However, requiring students to remember all the meanings at once could be overly challenging. Using the theme of ‘happy birthday’ for that term, the meanings of “giving birth” and “growing” were
mainly taught. Thus the teacher-researcher tried this explanation in class.

In today’s class, I taught students how to write “生日快乐” (happy birthday). I started with the first character 生 (birth & growing). Before telling students the meaning of the character, I first asked them: ‘What do you think this character means?’ Students answered: ‘Happy?’ ‘Remember Chinese people say happy birthday in a different order? So what do you think this character means?’ Students went on guessing: ‘Birthday?’ It’s much closer. 生 (birty & growing) and 日 (day) these two characters together mean birthday. So what do you think 生 itself means?’ Students answered: ‘Birth?’ ‘Very good. This character means birth. But when you look at this character, do you think this character has some relationship with birth?’ Students kept silent for a while. Then a girl said: ‘It looks like a person on the ground, with his arms and legs stretched out.’ It was interesting, but it actually had nothing to do with its real meaning. Maybe it was too hard for them. Thus I drew the picture on white board and told them while drawing: ‘When ancient Chinese people created this character, they actually wanted to describe a picture of the sprout coming out of the ground. Thus they used a horizontal line to show the ground. And the top part is like a tree with two pieces of leaves. Do they look similar?’ ‘Oh, yes. A tree comes out of the ground. So that’s why it means growing.’ (From the teacher-researcher’s self-reflective journals, 01/11/2013)

In Shuowenjiezi, the character is explained as: ‘生，进也。象艸木生出土上。凡生之属皆从生。’ (生 means giving birth and growing. The character is like vegetation growing from the ground. All the characters related to 生 use it as the radical.) If we do a further analysis of the character, it is composed of two different parts: a horizontal line and 生 . The bottom horizontal line means the soil (Ancient Chinese people always used 一 to represent the sky or the ground) and the top part is similar to 草, which represents the vegetation. These two parts together mean vegetation grows from the soil. Though it has experienced changes, the explanation can still be seen in the modern form.

From the conversation between students and the teacher-researcher at the beginning of the class, it can be seen that though the modern shape of 生 (birth & growing) character hasn’t experienced too much change from its original form, it is still too
demanding for beginning learners to discover the meaning by themselves. Even having been told the meaning of the character, they still found it hard to build the relationship. There could be several reasons. One reason is that students are comparatively young and have little knowledge of Chinese characters. They may find it hard to discover the inference by themselves. Another reason is that they are different from consistent associative compounds, the variant associative compounds require the learners to understand the meanings of different parts as well as realise the relationship between them, which is a more demanding requirement. Even the teacher-researcher, who speaks Chinese as first language, found it hard to understand the character without extra help from the book. Thus to learn associative compounds, especially variant associative compounds, guidance from a proficient Chinese teacher is essential.

However, despite of the learners’ difficulty in understanding the variant associative compounds, they seemed to grasp the meaning and origin of the character after having it explained through pictures and words. The students agreed with the idea the character wants to express: a sprout comes out of the ground means birth or growing. Thus it can be inferred that for the variant associative compounds, which haven’t experienced too much alteration over time, can still be understood by beginning Chinese language learners in Australian schools after the meanings of each part are explained, along with the relationship between them.

4.3.2 A Failed Example of Using the Associative Principle in Liu-shu Theory to Teach Chinese Characters

In the last part, the teacher-researcher introduced several examples of successfully using the associative principle to teach certain Chinese characters, which proves that for some characters the associative principle in Liu-shu theory is helpful for teaching Chinese characters to beginning learners in Australian Mandarin class. However, just like the indicative principle, being suitable to teach some associative compounds doesn’t mean it is good for teach all of them. In order to further study, some more characters were tested and examined.

The first associative compound chosen was the character 春 (spring). In order to
better examine the method, the teacher-researcher had a try to explain the character according to its associative explanation from *Shuowenjiezi*.

Considering the difficulty of understanding the character, I didn’t ask students to imagine why 春 means spring by themselves. Instead, I directly showed them the character in seal form, 春, and told them the meaning of each part. Then I asked: ‘After knowing the meanings of each part, can you tell me why Chinese people write spring character in this way?’ Five students put their hands up. I picked one. He answered: ‘Because in spring, the sunshine is warm, and grasses and trees sprout.’ ‘Very good. So the character can give you a vivid picture of spring, right?’ Then I continued to explain that later in order to make it simple, Chinese people wrote the top two parts together into 春 and kept the bottom part, 日 (sun). After I explained all these, the class kept silent for a while, and a boy sat in the first row said: ‘I am confused. They don’t look similar at all.’ Thus I asked the whole class. ‘Do you think 春 and its old form look similar?’ I heard few ‘yes’ but most of the students said: ‘No.’

According to Xu (100 AD), 春 (spring) is explained as: ‘春，推也。从艸屯，从日，艸春时生也。会意，屯亦声。’ (春 means hastening to grow. It is composed of three simple characters: 艸 (grass), 屯 (sprouting), 日 (sun). The whole character means that grass sprouts in spring. 春 is an associative compound, and 屯 also represents the pronunciation of the character.) It was confusing when the teacher-researcher read the explanation for the first time because the character 春 (spring), looked nothing like 艸 (grass) and 屯 (sprouting). However, the explanation appeared more reasonable when the ancient form of this character was searched.

The book, *Shuowenjiezi*, was written during the Eastern Han dynasty, when the most popular calligraphy form was small seal script (xiǎozhuàn). Thus in the book, the small seal script is regarded as the main research object. When Xu (100AD) encountered characters which were written differently, as oracle bone script (jiǎo gǔ wén) or big seal script (dà zhuàn), he also listed the oracle bone form as well as the big seal form in the book as references. The teacher-researcher realised that the explanation must be understood according to the small seal script.

After searching, it is found the small seal script is written as 春, which is actually formed by 艸 (grass), 屯 (sprouting) and 日 (sun). However, as the character
develops as well as modern character modernization, the character developed into the modern form “春”.

The data from teacher-researcher’s self-reflective journal show that when students were showed the seal script of 春 (spring) character and given an explanation of the meaning of each part, they still seemed to be able to accept it because they could figure out the relationship among different character components in accordance with Liu-shu theory by themselves. It proves that the logical relationship of this character from Liu-shu theory is still suitable for stage 2 and stage 3 students to accept and learn the character even nowadays. However the problem is that the big character transformation from 艸 (grass) and 屯 (sprouting) to 行 is hard for students to accept. They can find almost no similarity between them. The teacher-researcher has a similar opinion with students.

Another potential problem for variant associative compounds is that since the characters are composed of two or more different parts, the relation among components is sometimes obscure and hard to be comprehended. Some of them may even be misleading. For example, the character 春 (spring)’s three parts respectively mean grass, sprouting and sun. Apart from spring, there are many other potential explanations for the link among components, like vitality or flourishing. Character 休 (rest) is also included in associative compounds. The left part 亻 means person and the right part 木 means tree. Thus for ancient Chinese people, a person beside a tree is considered to mean ‘having rest’. However, a person beside a tree doesn’t have to be having a rest. He may be thinking, or planting the tree or even picking its fruit – a variety of explanations.

In conclusion, we can see that the associative principle is useful for teaching Chinese characters to beginning learners in Australian schools. It works quite well for the consistent associative compounds because of components consistency. But for variant associative compounds, whether the principle works well depends on the similarity degree of the components’ iconicity. However, it is also noticed that to avoid misunderstanding in understanding character components’ link, careful and detailed guidance needs to be provided by the teacher-researcher. Other methods should be considered for teaching characters that have undergone major changes.
4.4 Phono-semantic Compounds

The phono-semantic principle is another important character-formation theory. In Shuowenjiezi, the phono-semantic principle is explained as ‘形声者，以事为名，取譬相成，江河是也’. It means phono-semantic characters are composed of a meaning component and a pronunciation component. The semantic component is written according to the semantic category in which the character belongs to. And pronunciation part is another character (most of the time simple character) with same or similar pronunciation, just like characters 江 (large river) and 河 (river).

In conclusion, the phono-semantic compound usually has one part showing its semantic category and another part showing its close pronunciation. The creation of phono-semantic characters is major progress for Chinese characters. Compared with pictographs, indicatives and associative compounds, which are simply ideographs, phono-semantic compounds are both ideographs and phonograms. In addition, it has no problem expressing both concrete and abstract meanings because the semantic component only roughly shows the semantic category rather than a specific meaning. Because of this, the phono-semantic principle can be considered the most efficient method of creating Chinese characters. Among the 9353 characters collected in Shuowenjiezi, phono-semantic characters take up 82%. Of the 7000 most commonly used modern Chinese characters, phono-semantic characters represent more than 80%.

In this part, the teacher-researcher will introduce the application of the phono-semantic principle in real teaching. A discussion of the advantages and disadvantages of using this principle in teaching will be conducted at the end.

4.4.1 Transformations of Phonetic Components and Semantic Components Leading to Failure in Learning

The character 脚 (foot) is a phono-semantic compound and is to be examined. However, when considering using this explanation to teach character 脚 (foot), the teacher-researcher found a problem.
In tomorrow’s class, I want to teach students the character 脚 (foot). 月 (moon) means meat and 却 (but) for the pronunciation. However, it is impossible for me to teach in that way. First, students have never learnt 却 (but), so 却 (but) is also a new character for them, which means they have to learn 却 (but) first and then learn the character 脚 (feet). What’s worse, the pronunciations for 脚 (foot) and 却 (but) are completely different. Last but not least, 月 (moon), the character itself, doesn’t mean meat, but means moon instead. I have taught students the character 月 (moon) means moon. Will they get confused with the meaning of moon and meat? I will use another method instead. (From the teacher-researcher’s self-reflective journals, 18/05/2014)

The analysis about the 脚 (foot) in the self-reflective journal comes from Shuowenjizi. In Shuowenjizi, the character 脚 (foot) is given the explanation: ‘脚，胫也。从肉，却声。’ (脚, means shank. It belongs to the ‘meat’ category. 却 stands for its pronunciation.) It can be seen from the explanation that 月 (moon) is its semantic component and 却 (but) is its phonetic part. Three reasons can be concluded to explain the reasons why phono-semantic principle is not applicable in explaining the character.

First, learning the phonetic component may add an extra burden to students. The site the teacher-researcher chose to carry out the research is a public school and the students are beginning Mandarin learners with little knowledge of Chinese characters. Thus even though the phonetic component from phono-semantic compound is considered easy, it is still new to these students. If they want to learn the pronunciation of a phono-semantic compound according to the explanation from Liu-shu theory, they have to learn the phonetic component first, thus this added burden upon them.

The second problem that appears in the reflective journal is the pronunciation of the phonetic component is different from the pronunciation of the character. The character 脚 (foot) is jiǎo, but 却 (but)’s pronunciation is què – not even close to the pronunciation of 脚 (foot). Therefore in this case, even though the students take on the extra burden and learn the character 却 (but), according to the explanation from Shuowenjiezi, it will be of no help for their learning of the character 脚 (foot).

The third problem in the reflective journal is that the semantic component may be
confusing for beginning Mandarin learners. It even confused the teacher-researcher. Why does the moon have to do with meat? The answer is clearer after the oracle forms of these two characters were searched. 月 is the oracle form of 月 (moon) and 肉 is the oracle form of 肉 (meat). These two oracles look similar. Thus in modern Chinese characters, 月 (moon) is used as the radical for most of the body parts, meaning meat, like 脚 (foot), 肺 (lung), 腿 (leg), and 腰 (waist), for example. Considering the students’ ages, it might easily become muddled with the real character, 月, which means moon. Confronted with the radical like this, a specific explanation about the 月 (moon) character developing history must be given to students.

4.4.2 Transformation of Character Meaning Leading to Failure in Learning

Apart from the character 脚 (foot), another character, 吃 (eating), is also considered for teaching with the phono-semantic principle. However, when the teacher-researcher was contemplating the lesson plan, she found problems.

I plan to teach students the character 吃 tomorrow. But when I read the explanation in detail, I can’t find the meaning, eating, but stuttering, instead. It doesn’t surprise me that 吃 has the meaning of stuttering because it is common to say 口吃 (stutter), but I feel really surprised that the character doesn’t have the meaning, eating, in Shuowenjiezi. It seems that using explanations from Shuowenjiezi to teach this character is impossible. (From the teacher-researcher’s self-reflective journals, 09/08/2014)

The simplification of Chinese characters results in a number of characters losing their original shapes and meanings. In Shuowenjiezi, 吃 (eating) is given the explanation as ‘吃，言蹇难也。从口，气声.’ (吃 means stuttering or hesitating. It uses 口 as its semantic component and 气 for its phonetic component.) From the explanation it can be seen that character 吃 only means stuttering. In ancient times, another character 啖 (qi, eat) is used to represent the meaning of eating. In the example, the phono-semantic explanation from Shuowenjiezi for “eating” character is
only suitable for the original character, 嗑, which is no longer being used as a modern Chinese character. Because of the modern Chinese character simplification, 嗑 is left out and 吃 has both the meanings of eating and stuttering. However, for the replaced character, 吃, since it doesn’t originally have the meaning of eating, the explanation from Shuowenjiezi cannot explain its meaning of eating. Thus in this case, Shuowenjiezi is no longer appropriate to explain the character 吃 (eating).

The problem also arises with the character 面 (noodle).

After preparing the character 吃 (eating), I continued to prepare the character 面 (noodle). However, it is also weird that in the explanation for character 面 from Shuowenjiezi, the noodle meaning can not be found. Will it be caused by the same reason as character 吃 (eating)? (From the teacher-researcher’s self-reflective journals, 09/08/2014)

For the character 面, Shuowenjiezi gives it an explanation as: ‘面，顔前也。从卬，象人面形。’ (面 means a person’s face. It uses the character 首, which means head, as the radical, and the character is like a face.) The data from self-reflective journal and the explanation show that only the 面 only has “face” meaning in ancient time. Looking up the complex form of the character noodle and it is found that the character for noodle is originally written as 麵, with the left semantic part meaning wheat and the right part was the pronunciation. However because of modern character simplification, 麵 is simplified as 面. The character 面 presented a similar problem to the character 吃 – because of character simplification, they both lost their original forms and are combined with another character. The difference is the character 嗑 is completely abandoned and 吃 is used to express both meanings; while the semantic part of 麵 is omitted and 面, the phonetic part, is used to present both the meaning and the pronunciation.

4.5 Conclusion

This chapter, the first evidentiary chapter, mainly focuses on the examining the validity of applying Liu-shu theory in teaching Chinese characters in Australian public school classes. Through teaching different Chinese characters, the first four
principles, namely pictographic principle, indicative principle, associative principle and pictographic-phonetic principle were examined. Based on the analysis of the students’ reflection recorded in teacher-researcher’s self-reflective journal, interview and survey results, it is found that because of the transformation of Chinese character forms, meanings, and pronunciations, as well as the problems existing in Liu-shu theory itself, the principles from Liu-shu theory are not suitable to teach many characters. The failure led the teacher-researcher to develop chapter 5 and chapter 6, which focuses on introducing some pedagogical Chinese character teaching methods the teacher-researcher developed in teaching students the characters that are not applicable to be taught with principles from Liu-shu theory.
Chapter 5 Teaching Chinese Characters
with Modernised Pictographic Principle

5.0 Introduction

Last chapter examined the practicability of using the six principles in Liu-shu theory to teach Chinese characters to beginning learners in Australia. The examples and analysis in Chapter 4 show that the principles succeed in explaining some characters but fail in some characters as well due to the huge transformation of modern Chinese characters and the limitations of Liu-shu theory itself. Thus, in the next two chapters, other methods of teaching characters will be examined for those characters which are not applicable to be taught by using explanations from Liu-shu theory. Characters introduced in the next two chapters are no longer classified according to their classification in Shuowenjiezi, but in line with new teaching methods. The two chapters to follow together answer the third contributory research question: what pedagogical framework of Chinese character teaching could be developed and employed in teaching Australian students in their Mandarin class? In this chapter, methods, which use modern pictures to teach Chinese characters, will be introduced. The method is introduced from two aspects: teacher-supplied mnemonics and student self-generated mnemonics.

5.1 Teacher-supplied Mnemonics

This section examines teaching Chinese characters with modernized pictures supplied by the teacher-researcher. Two varieties of pictures are introduced: one kind features redrawn characters in forms which are more closely linked to the character meaning, and the other is pictures of real objects which have similar shapes to characters but a different meaning. Examples will be presented and analysis will be carried out to examine the practicality of these two varieties of pictures.
5.1.1 Teaching with Character Pictures

This part introduces the characters that the teacher-researcher taught with the character pictures, which can straightly show students the character meanings.

5.1.1.1 Effective Teaching with Character Pictures

In the previous chapter, the character 脚 (foot) was examined and found unsuitable for being taught with the phono-semantic method, due to the transformation of the character’s shape and pronunciation. The teacher-researcher sought another method for teaching this character and drew a picture herself, which drew 脚 (foot) as a real foot.

When the students were first shown the actual character I asked: “Does it look like a foot?” Most students kept silent and some shook their heads and said: “no”. I approached it differently in another class, where they were
shown the graffiti on the screen and then asked: “Does the character look like a foot?” Surprisingly, they all answered: “Yes! “I asked:”Why does it look like a foot?” A girl put her hand up and said: “Because there is a leg at right, and there are two shoes. (From the teacher-researcher’s self-reflective journals, 19/05/2014)

The character “脚” is comparatively complicated. It has 11 strokes and is composed of three parts. The character’s shape is far from its meaning, even considered from teacher’s point of view. Thus it is understandable and reasonable when students were first asked whether the character looked like a foot, most said no. However, the data from self-reflective journal show after some changes were made when the character was written again, most of them responded positively. Their attitudes toward this character changed dramatically after they were shown the picture. Furthermore, when they were asked the connection between the character shape and the meaning, the answers they gave were the same as what was expressed in the graffiti. All these proved that they were visually convinced by the idea conveyed by the picture and understood the character according to the picture. Kane (2006) suggested “the more links you can make with the familiar, the more mnemonics you can use, the easier it will be to remember the characters” (p. 81) The visual picture benefitted the students by stimulating the obscure relationship between real-life objects and unfamiliar Chinese characters. The potential connections between the script and the meaning were activated and became visible through visual tools (Margulies & Valenza, 2005).

5.1.1.2 Class Engagement Improved by Stimulating students’ Imagination and Using Self-scaffolding

The success of the character 脚 (foot) shows drawing character into a vivid picture can be an effective method of teaching Chinese characters to young beginning Mandarin learners in Australia. However, it is still essential to explore how teaching Chinese characters with character pictures can reach the most desired effect. Thus more characters were tested. Character 面 (noodle or face), as mentioned in the previous chapter, is classified as an indicative character in Shuowenjiezi, but due to modern character simplification, the explanation in Shuowenjiezi explanation was
inadequate and it was not possible to teach it using indicative method from Liu-shu theory.

Guan Erjia (2013), a master of education student from University of Western Sydney, did a research about using the street graffiti art to teach students Chinese characters. And 面 (noodle or face) is one of the characters she drew into character pictures. The picture draws the horizontal line at the top into a chopstick and the diagonal, attached line below as a noodle picked up from the bowl. Compared with the character “面”, which was something new for students, a bowl of noodles was more vivid and familiar.

(From Guan Erjia, 2013)

The teacher-researcher planned to first have students attempt to form meaning-picture relationship by themselves, and then show them the picture. However, due to a small mistake in preparing the PowerPoint, the teaching failed to have the ideal effect the first time:

The character 面 (noodle or face) is the last character I wanted to teach for 5/6 C today. Students were tired after their dancing lesson. However, when I turned to the slide for 面 (noodle or face) character, I was surprised to find that the character picture had already been there without my clicking the mouse. It must have been the reason for my forgetting to set the animation last night. So I could only explain: “The picture draws the horizontal line at the top into a pair of chopsticks, the diagonal line below as a noodle picked out from the big bowl at the bottom. Is this picture vivid?” I heard some students say: “Yeah, it is good.” “It’s interesting.” However, more students kept silent and were not quite excited. (From the teacher-researcher’s self-reflective journals, 01/09/2014)

The students didn’t show much interest as expected towards the picture. Their silence...
and comparatively low excitement show that they were not fully engaged in the character teaching. Engagement is vital in achieving good teaching result. It is generally accepted that engagement in class is vital for students’ effective learning, especially for young learners. Meaningful cognitive demands of formal education cannot be mastered through passive listening and reading, nor through being entertained; they require an engaged student. (Lamborn & Wehlage, 1992)

An analysis was made into the causes of the students’ disengagement. The first was that they were not in the best situation for learning, as they had just finished their dancing lessons. The teacher-researcher could easily see fatigue on their faces, so it could be assumed that this may have been one reason why the students were not fully involved in the class.

Another cause for their disengagement is likely due to the premature introduction of the character picture. It is suggested that providing opportunities for children to use their imagination in class would increase their engagement. Samuel Reed (2014) proposed that the rules for engagement require that students use their imagination. Without being given opportunities to think and reflect, their engagement in class would be more subdued, but vastly increased after being first given this opportunity to think and then presented with a picture. For teaching the 面面(noodle or face) character in the next class, the teacher-researcher repaired the PowerPoint problem and had another try.

I moved on to another class, 5/6 W. Before showing students the picture, I showed them the character and the character meaning first: noodle. Then I asked them whether they could find any connection between the character and its meaning. Students tried very hard to imagine and some of them raised hands and tried to give me the answer. A student said: “Because this character is full of lines and noodles are lines.” Another student said: “It looks like a weird plate with some noodles on it? Maybe…. I don’t know.” They couldn’t give better imagination. Therefore I gave them some hints. I said: “What do Chinese use to eat noodles?” “Chopsticks.” “So does the horizontal line at top look like a pair of chopsticks? And maybe the diagonal line below like a noodle taken out from the bowl?” Then I heard some students happily say: “Oh yes! I can see it now!” “That’s interesting!” After all these, I showed them the character picture above. Many students exclaimed: “It’s so clever.” “I really like it!” (From the teacher-researcher’s self-reflective journals, 01/09/2014)

Different from the class summarised in last reflective journal entry, the students were
first asked to attempt to link the character and its meaning by themselves, which gave them a chance to use their imagination, and involved themselves more in the lesson. From the students’ answers in the self-reflective journal, students were trying to think about the link, which indicates the students were getting better engaged in the character teaching. However their hesitation in offering answers suggests the students themselves also realised the links they created were not vivid or relevant enough.

The teacher-researcher’s help was needed in explaining the character. Apart from giving students the opportunity to build up the association, the teacher-researcher also used verbal instruction to lead them explore step by step. Asking them questions and guiding them to the answers can be seen as a process of encouraging students to connect their sociolinguistic and prior knowledge – of what Chinese people use to eat noodles and what noodles look like – to language learning. This is an important strategy in scaffolding. Students self-scaffolding refers to the way in which learners’ own visualisation and/or auditory expression is exploited by a skillful teacher to direct and support their learning. The teacher-researcher used questions to lead them to consider their own knowledge from their own perspective. The process of self-scaffolding can help students to better understand and remember what they learnt.

After verbally leading students to self-scaffold, which allowed them to gain an understanding of the link between the character shape and its meaning in their minds, the teacher-researcher then showed them the character picture. After seeing the picture, the student’s excitement and interest was obvious. It is inferred that this was due to the conformity between their imagination and the character picture.

By comparing the different teaching results, it can be realised that in order to increase student’s degree of involvement and strengthen their memory, it is essential to give students the chance to build up association by themselves and verbally lead students to self-scaffold. This will be further discussed in 5.1.2.
5.1.1.3 Students' Character Writing Improved by Verbal Explanation

In using this character teaching method, apart from being aware of leading students to conduct self-scaffolding before presenting teacher-supplied images, it was found that adding a verbal explanation while explaining them the character writing was also helpful for the character writing. The character 吃 (eating) was the first verb character taught using character pictures. In the previous chapter, using Liu-shu theory to teach this character was determined to be unsuitable because of the character’s simplification. The meaning, eating, is a newly added meaning for the character, which cannot be found in the explanations from Shuowenjizi:

After asking students to establish association by themselves and realising it is too challenging for them, I showed them the picture I drew that made character 吃 (eat) into a vivid girl.

“Oh yes! That’s clever.”

“The girl is so cute.” I heard some laughing and amazing sounds from the class. Students seemed to like the picture. (From the teacher-researcher’s self-reflective journals, 04/08/2014)

The mouth radical on the left became a depiction of an ice-cream bar and the right
side part is a drawing of a smiling girl with her mouth open. Seeing this, it is easy for
the reader to recognise what the girl is doing – eating the ice-cream bar – which
visualised the action of “eating”. Just as expected from characters 脚 (foot) and 面
(noodle), the students’ reactions showed they enjoyed seeing the picture. However,
this time the teacher-researcher decided to go a little further.

The writing of the character was integrated into the character picture teaching:

When I was teaching them how to write the character, I kept explaining the
character according to the picture. “We first draw the top part of an
ice-cream stick. Then we write the girl’s nose, a diagonal line goes. And
his lovely eye, a short horizontal line...” Later, I asked a student to try to
write the character on the white board. When he was writing, I kept giving
him some hints. “Then we come to the nose, the eye, the jaw...” The boy
wrote the character correctly. Then a girl was invited after. While she was
writing, I asked: “What’s the next?” “The nose... the eye...” (From the
teacher-researcher’s self-reflective journals, 04/08/2014)

From the girl’s murmuring when she was writing the character, it could be seen that
she had accepted the image and applied it in remembering and writing the character.
It is assumed that the success of the character picture in helping students’ character
writing is also partly because of the teacher-researcher’s verbal explanation. This is
actually a process of modeling, an important process in scaffolding, where students
can successfully establish memory of the character both verbally and visually by
simply imitating and remembering the model presented by the teacher-researcher.

### 5.1.1.4 Using Color- in Activity to Deepen Students’ Character Memory

After class, another activity is given to students to help them better enforce their
character memory- color in the characters.

There were several factors taken into consideration when the teacher-researcher
decided to use coloring activity to enforce students’ character memory. First, coloring
is an activity that students are familiar with and love to do.

This can be seen from the teacher-researcher’s early self-reflective journal when she
was doing the observation:
It was the first day I observed year 1 class. Year 1 classes spent a lot of time on doing spelling and math activities. It was interesting to find that almost every worksheet would have a blank picture at the bottom or on the side. And for the students who finished the practices early, classroom teacher would ask them to spend some time on coloring in the picture. I saw some students were really into it, especially girls. They were trying their best to use as many pretty colors as possible to make the picture fancy. (From the teacher-researcher’s self-reflective journals, 07/08/2013)

Coloring in is an important consideration when the teacher-researcher was designing her classes. One reason is that students are quite familiar with and really enjoy the coloring activity. Students started practicing coloring activity since they were year 1, and even earlier. Also the data from the journal reflect that students were trying their best to color pictures well. It will happen only when students are given the things they love to do.

In addition, coloring activity fits in with Australian curriculum design well. Australian government attaches a lot importance to visual arts in the curriculum plan because visual arts are helpful for students’ learning in many aspects. As written in the Australian Curriculum (Australian Curriculum, Assessment and Reporting Authority, 2012), “like all art forms, the visual arts have the capacity to engage, inspire and enrich all students, exciting the imagination and encouraging students to reach their creative and expressive potential.”

What’s more, choosing coloring as an additional activity can help students get more familiar with the character when they spend more time seeing and reading the character. The Ebbinghaus forgetting curve below shows how memory fades with time.

Graph 5.1 The Forgetting Curve by Ebbinghaus (1885). (The dots show the original data)
The German scholar Hermann Ebbinghaus (1885) taught himself lists of nonsense syllables and recorded how much time he needed to relearn them after a period of time. The graph shows the time saved on relearning the knowledge. The longer the elapsed time, the less time was saved. In other words, memory weakens with the passage of time. Thus to help students retain memory, it is necessary for them to spend more time seeing and learning characters.

The last reason is that coloring pictures can give students a sense of achievement:

Last week, I asked students to finish the coloring activity as their homework. So I checked their coloring pictures at the end of the class on today. When I asked them if they finished the coloring activity, almost the whole class put their hands up apart from two students who left their homework at home. Students showed their coloring pictures very proudly to me. And when I asked them whether I could take photos of some pictures, many of them eagerly showed their pictures to me. I even heard three students said to me: “Miss Wu, can you take a photo of mine?” It seemed that they all were proud of their coloring pictures. (From the teacher-researcher’s self-reflective journals, 26/05/2014)
The data from self-reflective journal show that almost all the students finished this homework, which can reflect that students were keen on doing the character coloring activity. In addition from students’ eagerness to show their pictures and have photos taken of them, it can be said that most of the students were proud to show their pictures to others and had a sense of achievement.

5.1.2 Teaching with Non-character Pictures

The meaning of the above characters all had images within the pictures that directly showed the meaning. However it also happens that some characters cannot be successfully turned into pictures this way. For the character 米 (rice), the teacher-researcher could not make it into a picture because of her limited drawing skills, yet she still attempted to link this character to some pictures familiar to the kids.

After showing the form, practicing the pronunciation as well as explaining the meaning of the character, I asked students: “Do you find the character familiar? Does it look like something you may see in your life?” The whole class kept silent for a while, which made me realise students may find it hard to find the answer by themselves. So I showed them a picture of the phone keypad, and asked: “Can you find something similar on the keypad?” “The asterisk!” A boy called out. “Well done! If you look at them carefully, you may find the only difference between the character and star mark is character 米 (rice) has a vertical line in the middle.” After my explanation, students kept silent and didn’t give too much response. (From the teacher-researcher’s self-reflective journals, 11/08/2014)

While the teacher-researcher was designing the lesson plan, it came to her mind that in China, people call the asterisk button on telephones “米字键” (character 米 button) because this character and the asterisk look similar. In addition, it is also taken into the teacher-researcher’s consideration that the asterisk telephone button is something students did not find unfamiliar. Therefore, using asterisk button picture However, from the students’ reflection in self-reflective journal, they did not show as much interest and enthusiasm as they showed for the other pictures where characters were drawn. Thus it concerns the teacher-researcher about the longer-term effect of the teaching of this character.
One week later the teacher-researcher examined the students’ memory of the character.

At the beginning of the class, I showed them the character 米 (rice) and asked them the meaning of it. None of the students put hands up after hearing the question. So I persuaded them to think a little bit more. I said: “Do you still remember what I told you last week? The character looks like something on the phone, what is it?” “Oh…” I saw more hands put up. A boy stood up and said: “The asterisk?” “Well done. So what about the meaning? Do you still remember the meaning of the character?” He kept hesitated for a while and said: “I forget.” (From the teacher-researcher’s self-reflective journals, 18/08/2014)

The data from self-reflective journal show that the boy had an impression about the picture he was shown but the character form as well as its meaning remained unfamiliar. Other students’ silence also shows they were not confident enough with the answers they had in mind, so they were not dare to put their hands up and answer the question.

Carrying out analysis for the data in the journal, there were two possible causes for the failure in teaching the character 米 (rice). First, the teacher-researcher and students were culturally different. They have different mother tongues: Chinese and English. They have different life backgrounds and different cultural knowledge, which means they think of things from different perspectives. The asterisk on the phone is called “米字键” (character 米 button) is background knowledge for the teacher-researcher, but not for the students. It is probably the first time for them to see this characters. Thus failing to consider from students’ perspectives would be a defect of teaching characters with teacher-supplied mnemonic. This will be further discussed in 5.2.2.

Another reason may lay in the lack of a sufficient link between the image of the character and its meaning. Learning character is not only about reading or but also about recognition. It can be divided into four levels: character recognition, character meaning, character writing and character pronunciation. Shen (2005) discussed all the aspects of learning Chinese characters. Each character contains three linguistic components: sound, shape, and meaning. To learn a character is to master these three components. Learning to write characters would be extremely challenging for Stage two and Stage three students. Allen (2008) conducted research into the hand-writing
of Chinese characters and concluded that learning to write Chinese characters (hanzi) from memory was an extremely inefficient use of time for students of Chinese as a foreign language. This was due to the considerable amount of time needed for writing as well as the declining need for writing characters. Thus considering the students’ age and the focus of this research, character recognition (shape) and character meanings were set as the main targets. Student’s answers in self-reflective journal show that students do have some impression about the asterisk on a telephone, and it might be assumed that the image does give them a visual clue, which would help their character recognition. However, their failure to recall its meaning made it clear that the connection of image to character had not been taken place. It is also believed that the meaning-irrelevant picture can also be an extra burden on students’ learning.

When making the plan to teach the character “八” (eight), the teacher-researcher took some possible connections into consideration. Compared to character 米 (rice), character 八 (eight) is actually harder to teach. Its form might be considered easy, which has only two diagonal lines, while the meaning is relatively abstract. The teacher-researcher found it impossible to draw a picture of the character that could directly show the meaning. It was even challenging for the teacher-researcher to think of an explanation, so she asked an experienced Australian Chinese teacher for advice.

Her explanation was later applied in character teaching:

I said and wrote the character on the white board at the same time: “If I put the diagonal line on the left a little bit more vertical, does it look like a high-heel shoe?”

“Oh yes!” “A little bit.” Most kids gave positive answers.

“So can you tell me what is the most popular shoe size for women in Australia? Girls must know the answer better.”

“Oh…” Some students seemed to have an epiphany. The classroom teacher, who is a female, chuckled a little. Then I found about seven students raised their hands. I picked a girl and she said: “Number seven or eight.”

“Very good. So the character eight looks like a high heel shoe and the most popular high-heel shoe number in Australia is number eight. Is the explanation helpful?”
“Yes…” I heard most students gave me the affirmative answer. (From the teacher- researcher’s self-reflective journals, 28/07/2014)

The picture in the example discussed above successfully links the character form to a real-world object, the high-heel shoe. It was noticed that there was no clear relationship between the image and the meaning for character 八 (eight). However, different from the unsuccessful attempt to teach the character 米 (rice), a relevant verbal explanation was added to make the connection. More importantly, the explanation began in the students’ Australian cultural context.

“Most popular high-heel shoe size is eight” was common knowledge, acknowledged and accepted by the students:

In today’s class, I taught students the Chinese money unit. When I finished writing the top two diagonal lines of the character 分 (cent), I found it is actually a character 八 (eight). So I stopped and asked students: “Do you still remember what this character means?” Very quickly, around half of the students raised their hands, and a boy told me the right answer: eight. I then asked: “But do you still remember the picture and the story I told you to remember the character?” This time fewer students put hands up, but there were still around eight students. And a girl told me: “Because it looks like a high-heel shoe and the most popular woman size in Australia is eight.” (From the teacher- researcher’s self-reflective journals, 28/08/2014)

The self- reflective journal above reveals that students were aspiring to answer the question, and most were able to recognise the character. Most importantly, “high-heal shoe” story which links the character form and character meanings was still remembered. Considering the time that had passed since that lesson, around a month, and the students’ ages, stage 2 and stage 3 students, the outcome from teaching this character can be considered ideal. It can be considered that the teaching of this character was successful.

In the interview, when students were asked how they could remember the meaning of some characters, two students answered:

Student N: It looks like high heel shoes and the most common shoe size for us is eight.

Student D: I remember the one for eight which looks like a shoe. And eight is the most common shoe number. So I remember. (Focus group interview, 4 December)

There were primarily two reasons for successfully teaching this character. One was
as mentioned for the successful teaching of character 吃(eat), the teaching for this character combined both visual and verbal mnemonics, the combination of which can be considered most effective. Information is better remembered when dual rather than single coded, because when if one memory trace is lost the other remains available. (Kuo & Hooper, 2004) Another important reason is likely to be the appropriate link between the character shape and its meaning. The story about the most popular size for women high-heel shoes provided a proper Australian culture-based link between the seemingly irrelevant picture and the meaning of the character. Many students were able to recall the story after a certain period of time.

5.2 Students’ Self-generated Mnemonics

This section discussed teaching Chinese characters with pictures generated by the students themselves. This section is divided into two parts. The first part is about examples where students learn characters successfully using their imagination, and the second part shows instances where students failed to think of effective methods.

5.2.1 Students’ Successfully Learning with Self-generated Mnemonics

When teaching Chinese characters with pictures, apart from thinking from mnemonics provided by teacher-researcher, it is also important to encourage students to generate mnemonics themselves.

When teaching the character “日”(day & sun), the students were first given the character together with its meaning. They were asked about a link between the character and its meaning before being given an explanation.

Many creative ideas were received from students:

I saw many students’ hands up after they saw the character and heard the question of linking the character to its meaning. A boy said: “It means day because a day is half day and half night.” After that a girl said: “It means day because it is half sky and half land.” Another boy gave different answer: “It looks like a window. And you can always see the sun through the window, just like now.” There is even a boy said: “It is like a desk with
a line in the middle.” “Also a chair.” More and more students called and were eager to tell me what they thought, but I found many of them went too far. (From the teacher-researcher’s self-reflective journals, 11/11/2013)

Carrying out analysis for the self-reflective journal above, there were three important points that required attention. First of all, without being bound by a rigid understanding of Chinese characters, students showed creativity in finding a link between the character form and its meaning. Creativity is defined as a dynamic thinking process that includes divergent and convergent thinking functions as well as the critical and analytical. (Wei & Dzeng, 2013) Creativity is greatly affected by age as well as culture and education background. As an adult, the teacher-researcher imagined and thought the character from an adult’s point of view, while stage three students inhabit a child’s world, which leads them to contemplate differently. Also, the teacher-researcher’s Chinese cultural and educational background and the students’, of Australia, are also different. Participants’ interpretation of character meanings reflect their cultural background and experiences (Kuo & Hopper, 2004).

Learning through exploration is the core spirit of education in Western societies, and children’s creativity is given great emphasis. (Wei & Dzeng, 2013) The difference can be seen in this case. Students explained the character by dividing the character into half (half sky half land and half day half night), which, however, had never entered the teacher-researcher’s mind because the character shape and character meaning were taken for granted. Because of this huge difference, giving full play to students’ imagination can do great help in generating more creative and students-preferred mnemonics.

Second, students’ interest and involvement can be greatly enhanced by the creation of an effective visual mnemonic. Through the process, the students were active in considering and answering the question from different perspectives. Their positive attitude in seeking a connection can be regarded as an indication of their level of interest had risen. Interest and appreciation of the subject are two important indexes of engagement that are related to actual activity choice and participation (Mantzicopoulos & Patrick, 2011).

The third point arising from the self-reflective journal was that the students’ thoughts easily went astray. When a student proposed the character to be like a desk, which had nothing to do with its real meaning, other students followed his idea and
wandered too far from the character’s actual meaning. Therefore it is suggested here that appropriate guidance is needed when the students were encouraged to use their imaginations. This will be further discussed in detail in 5.2.2.

In conclusion, young students are rich in creativity and making full use of it can encourage their interest and reinforce their memories. But it is more than this. Though teachers usually properly provide mnemonics, sometimes students are apt to use their own.

The character 头 (head) is a typical example and was taught under the topic of the body.

First of all, I showed students the picture I prepared together with my verbal explanation. “The character is like a man with arms stretched out and two arrows at the top pointing to his head, which shows the meaning: head.”

“All right.” Students’ attitude showed that they weren’t averse to the explanation, but didn’t show too much interest in it either. Later, a girl put hand up and asked: “Miss Wu, but why were there two arrows?” I was surprised and halted for a while because I never considered this question before. “Two arrows were used to emphasise because head is such an important part for human being.” “OK…” The girl seemed to be not very satisfied with the answer. (From the teacher-researcher’s self-reflective journals, 19/05/2014)

Character 头(head) is a modern simplified character and is vastly different from its original complex form, “頭”. This character encounters with the same problem as other characters referred to in Chapter 4, which were not capable of being taught with explanations from Shuowenjiezi due to modern character simplification. However, as reflected from the journal, falling short of the teacher-researcher’s expectation, the students showed interest in the explanation provided. Even then, they questioned the effectiveness of the mnemonics provided. This can be a big issue...
for teacher-supplied mnemonics. As in the case of the character 日 (day and sun), students are creatively different from the teacher-researcher due to culture and age differences. It is likely that the mnemonic provided by the teacher did not fit their way of thinking, making it a less than ideal way for students to commit the character to memory. It might also be questioned whether the improper or ineffective mnemonic from the teacher added an extra burden to students in retaining a memory of the character. Sometimes students’ mnemonic is more proper than the teacher-supplied one.

Suddenly, another boy called out excitedly: “Miss Wu, I find another way to explain it?” “What’s that?” He put his booklet high, turned it around and said: “If we turn the character around, it looks like a smiling face with tongue stick out.” A smiling face? “Where?” “How?” Many other students were curious about it. Later I heard more and more students say: “Oh yes.” “I see it.” But I didn’t get it still! So I stared at it and tried very hard to see the character. Finally, I understood.

The two dots at the top are like two eyes. The curving line in the middle is like the mouth. The horizontal line is like the nose and the dot at the bottom is like a tongue stick out. It’s so vivid. How amazing! I could never consider explaining the character in this way! (From the teacher-researcher’s self-reflective journals, 19/05/2014)

The teacher-researcher was again impressed by the students’ creativity. Students were able to look and think over characters from completely different perspectives. Similar expressions of their imaginations were found in teaching the characters “芒” (first character for 芒果, mango) and “西” (first character for 西瓜, watermelon). Character “芒” was explained by the students that the character as being like an open mouth and people wanted to open their mouths to eat delicious mangos. The character“西” was explicated as a knife held above a piece of watermelon.

Table 5.1 Students’ Creative Imagination for Characters
<table>
<thead>
<tr>
<th>Character</th>
<th>Student’s imagination</th>
</tr>
</thead>
<tbody>
<tr>
<td>日 (day &amp; sun)</td>
<td>(1) Half day and half night; (2) Half sky and half land; (3) A window and people look at the sun through the window.</td>
</tr>
<tr>
<td>头 (head)</td>
<td>Turn around and looks like a smiling face.</td>
</tr>
<tr>
<td>汪 (mango)</td>
<td>A person opens mouth big to try to eat mango because mango is yummy.</td>
</tr>
<tr>
<td>西 (watermelon)</td>
<td>A knife held high above a piece of watermelon.</td>
</tr>
</tbody>
</table>

The students’ impressive displays of imagination indicate they are quite rich in creativity and capable of using their prior image knowledge in learning new knowledge.

After showing students how to write the character, I invited a girl to the front and had a go on white board. After finishing two dots at the top, I asked her: “What’s the next stroke.” Then she answered: “The mouth.” The mouth? I puzzled for a while; I realized she was thinking the character as a smiling face! “So the next step is the nose?” “Yes!” The girl answered affirmatively. (From the teacher-researcher’s self-reflective journals, 19/05/2014)

When the girl was asked to come forward to write on the white board, she wrote the character according to the “smiling face” mnemonic, rather than the one the teacher had offered. It suggested that students preferred to keep memory according to their own the mnemonic, which seemed more reasonable to them, rather than the one provided by the teacher-researcher. This accorded with the results of some research into the effectiveness of self-generated mnemonics compared with the teacher-supplied mnemonics. Kuo & Hooper (2004) suggested that students using a self-generated visual mnemonic outperformed those using a supplied mnemonic. Generating one’s own relationship between a symbol and its meaning appears to be an effective strategy for remembering Chinese characters. Bower (1970) performed an experiment to test the effect of self-generated mnemonics and supplied mnemonics. He instructed subjects either to imagine a visual interaction between two words in a pair or to create a sentence with each pair of words. He found that the visual self-generative condition produced the best recall of word pairs. This is possibly either because the self-generated mnemonic fitted the students’ own
thinking mode or it left a deeper impression on their minds due to the greater effort put in thinking of the method.

5.2.2 Students’ Unsuccessfully Learning with Self-generated Mnemonics

The last part showed students’ rich creativity and advantages of self-generated mnemonics in students’ learning of Chinese characters. However, self-generated mnemonics do not work well all the time, and supplied mnemonics may be needed to assist the students’ Chinese character learning on occasion. Example of students failing to make effective links between characters and their meanings has been mentioned in examples offered in 5.1 as well as the teaching of the character 日 (day and sun) in 5.2.1. This part will therefore primarily introduce and analyse cases where students were not able to generate effective mnemonics in detail.

5.2.2.1 Students’ Failure in Generating Mnemonics caused by Low Iconicity and Complexity

The teaching of the character 吃 (eat) was introduced in 5.1.1, with a character picture. However, before the teacher-researcher showed them the picture, the students were asked to try to find a relation by themselves:

I firstly asked students what the character 吃 (eat) looked like to them and whether they could find any relationship between the character and its meaning. Students looked at the character and kept silent for a while.

Then a boy raised his hands up and said: “Maybe it looks like a pancake on the pan.”

“Pancake on the pan?”

“Yes? Maybe.” He answered with uncertainty.

“The right part looks like a person kneeling down with a hat.” Another boy said.

“OK. But does it have something to do with the meaning? Can you think of an image linked with the meaning?” I said.
All the students kept silent and none of them put hands up. (From the teacher- researcher’s self-reflective journals, 01/09/2014)

The students failed to describe the character with an effective or vivid image. They paid too much attention to the image link but not enough to the character meaning and character form link. The table below shows some examples of students failing to generate reasonable mnemonics.

Table 5.2: Examples that Students Failed to Generate Reasonable Mnemonic

<table>
<thead>
<tr>
<th>Character</th>
<th>Category in Liu-shu Theory</th>
<th>Students’ Mnemonic</th>
</tr>
</thead>
<tbody>
<tr>
<td>水</td>
<td>Pictograph</td>
<td>It looks like a person with two arms</td>
</tr>
<tr>
<td>生</td>
<td>Indicative</td>
<td>A person, with legs and arms stretched out, on ground.</td>
</tr>
<tr>
<td>脚</td>
<td>Phono-semantic compound</td>
<td>Students could make no link themselves.</td>
</tr>
<tr>
<td>面</td>
<td>Indicative</td>
<td>Full of lines and noodle is straight/ weird plates with some noodles on it.</td>
</tr>
<tr>
<td>吃</td>
<td>Phono- semantic</td>
<td>Pancake on a pan/ A person kneed down with hats on.</td>
</tr>
</tbody>
</table>

Taking students’ ages and the characters’ comparatively abstract meanings into consideration, students’ failure to produce reasonable clarification is understandable. In the failed examples above, some commonalities can be seen. First of all, four-fifths of the characters were not pictographs. These characters were not originally created according to the shapes of real objects, in other words, the iconicity between the characters and their meanings is very low which makes it understandable that students find it difficult to link the shape to its meaning. The character 水 (water), a pictograph, is markedly different than its oracle form, as discussed in Chapter 4. Its iconicity with the real object has been lost and therefore finding a link would be challenging for students. Second, while students may have given some characters inaccurate explanations, they could offer no explanation at all.
for the character 脚 (foot). Apart from its low iconicity, its shape is more complicated than others. It can be assumed this complexity also contributed to the students’ failure.

Kuo & Hopper (2004) concluded that creating effective mnemonics may require considerable effort and creativity. Kibler & Blick (1972) also suggested that if the learner was too young or the task was too difficult, then for the learners themselves to discover an appropriate mnemonic would be challenging. At such a time, appropriate mnemonics provided by the teacher would be more helpful.

5.2.2.2 Teacher’s Guidance is Essential in Helping Students Generate Mnemonics

The character 七 (seven) has been tested in Chapter 4 of using Liu-shu theory to explain. However, since there was too much culture contained in the explanation from Shuowenjiezi, it was considered inappropriate for teaching to beginning Chinese learners. A new method is needed for teaching this character.

Students were first asked to have a try before the teacher-researcher’s mnemonic was provided:

In today’s class, I taught students the character 七 (seven). Before my teaching, I did the similar thing, asked students what the character looked for them. A boy said it looks like a capital L with a horizontal in the middle, but I said: “But it doesn’t have too much to do with the meaning of seven, isn’t it?” The class kept silent. I didn’t tell them my explanation directly, but gave them a hint instead. “What does the character look like if I turned the character upside down?” I said this, while turning the character card in my hand upside down. “oh!” Suddenly I saw 5 or 6 hands up. “Come on guys. What does the upside down character 七 (seven) look like?” While I was saying this, I saw more hands up. More than half of the class actually had their hands up. I picked up a girl and she said: “It looks like a number seven.” “An Arabic number 7?” “Yes!” The girl answered firmly. (From the teacher- researcher’s self-reflective journals, 28/07/2014)

Here, as in the previous case of 吃 (eat) case, students gave an irrelevant explanation of the character form and its meaning. The image of a capital L with a horizontal line in the middle, is quite similar to the character form, but did not bear a close relationship with the meaning of seven. Nevertheless, with the small hint from the
teacher-researcher, the students found a more efficient and reasonable mnemonic, which was same as the one the teacher-researcher had prepared. Carol et al (1983) found that subjects who were instructed to form mental images did not recall or recognise more items than those who were instructed simply to repeat the word-pairs or remember according to the supplied mnemonic. They made the assumption that even gifted children need to be explicitly taught to use mental imagery as a memory strategy to maximise its potential for remembering important information. It would be an exaggeration to describe the kids in this public school as gifted children, and important for the teacher-researcher to them along at certain points.

5.3 Discussion of Using Modernised Pictographic Principle

The two previous sections offered examples of using the modernised pictographic principle to teach Chinese characters to beginning learners in Australia. The next part will analyse the strengths and limitations of using the modernised pictographic principle. After that, based upon the experience of teaching, suggestions will be made to make full use of the modernised pictographic principle.

5.3.1 The Strengths of Using Modernised Pictographic Principle in Character Teaching

5.3.1.1 Raising Students’ Interest in Learning Chinese Characters

An important strength of the modernised pictographic principle in teaching Chinese characters is it helps to arouse students’ interest in learning Chinese characters. This was obvious when students were shown the character picture 麵 (noodle), their responses showed they were considerably attracted to it. Their interest was also increased when they were engaged in using of their creativity to imagine visual explanations for different characters, which was reflected when they were asked to give explanations for 日 (day or sun), and became very active. Interest is very important in learning. There is an old Chinese saying: “兴趣是最好的老师” (Interest is the best teacher). It can be concluded that applying the modernised pictographic
principle in Chinese character teaching is helpful for students’ Chinese character learning in respect to raising their level of interest.

5.3.1.2 Helping Understand Characters and Reduce Students’ Learning Load

Another important strength of using the modernised pictographic principle in character teaching is it can help in understanding characters as well as reducing the learning load of Chinese characters. One reason why characters are so difficult for beginning learners in Australia is that Chinese characters are extremely new and different to them and they can find no similarity in their own knowledge. This became clear in the example of character picture 脚 (foot). Students could not see any link at the beginning but after being shown the picture, they understood the character and accepted the meaning conveyed by the picture. The character picture reduced their learning load of remembering and understanding the characters. It not only helped them to remember the character form, but the character meaning as well.

The teacher-researcher conducted a survey about the difficulty students experienced in learning the 10 number characters. There were five ranked levels of difficulty for students to choose.

Table 5.3: Five difficulty levels of number Chinese characters

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very easy to understand</td>
</tr>
<tr>
<td>2</td>
<td>Easy to understand</td>
</tr>
<tr>
<td>3</td>
<td>Not easy not difficult to understand</td>
</tr>
<tr>
<td>4</td>
<td>A little bit difficult to understand</td>
</tr>
<tr>
<td>5</td>
<td>Very difficult to understand</td>
</tr>
</tbody>
</table>

Three number characters were taught with the modernised pictographic principle – 七 (seven), 八 (eight), and 十 (ten). The examples of teaching characters 七 (seven) and 八 (eight) have been previously introduced, and the character 十 was linked with the picture of a cross. The line graph below shows the average difficulty score for these three characters. The scores for the characters 七 (seven) and 八
(eight) are almost the same, around 2, while the score for 十 (cross) is even lower than 2. It would be appropriate to describe these three characters as “easy to understand”.

Graph 5.4 Number Characters 七 (seven), 八 (eight), 十 (cross) Difficulty Score

(Survey interview, November 17, 2014)

5.3.2 The Limitations of Using Modernised Pictographic Principle in Character Teaching

5.3.2.1 Misleading Students Character Writing

An important limitation of the principles is they can do little help in teaching the characters’ written form, even misleading. When students were asked to write according to the given pictures, they were attracted by the picture provided as an explanation. The character 果 (fruit) was taught as a fruit box on a tree. When the students were asked to write this character, many wrote it as a picture – a box on the tree.
Chinese native speakers, begin to learn Chinese characters from early age, but to these Australian beginning learners, Chinese characters are very new. To them, Chinese characters are more like pictures, instead of meaningful integrative symbols.

Wang, Li, Zhong, & Xu’s argument supports this finding:

多数留学生对汉字的认识跟我们本族人相比,有很大的不同。我们学习汉字是从笔画入手,从框架着眼,以字形区分字义,每一个汉字都是有意义的符号,笔画之间是有联系的。但是留学生眼中的汉字只是一堆无意义的符号，他们无法体会笔画之间的相互关系。因此，很多学生初次接触汉字,往往觉得无从下手,只是盲目地描画这些汉字。（Huo, L, 2015; Wang, Li, Zhong & Xu, 1994, p.23）

Translation: Many CFL learners have a different understanding of Chinese characters compared with Chinese native speakers. When Chinese native speakers learn Chinese characters, they start from strokes and composition, and distinguish the shapes by meanings. So for them, characters are meaningful symbols with links among the strokes. However for CFL learners, Chinese characters are only meaningless symbols. They can not understand the relationship between strokes. So beginning learners will find characters difficult and will only draw instead of writing them. (Huo, L, 2015; Wang, Li, Zhong & Xu, 1994, p.23)

Without sufficient prior knowledge of Chinese language, beginning learners are easily misled in learning Chinese characters, and remembering characters by picture only makes it worse. Students draw the picture, instead of actually writing the character. It can be concluded that giving students visual explanations and verbal cues are only not sufficient for them to learn the correct written script.

5.3.2.2 Not Applicable for All the Characters

Another limitation of the principles is that they are not applicable for all characters. Considerable pressure was put on teachers to think of reasonable explanations for all the characters. As in the discussion of pictographic principle in Liu-shu theory, it was found that because of the transformation of character shapes as well as character meanings, it would be hard to use many characters’ inner cultural meanings and
development to explain them. Also, the example of character 米 (rice) proves that students have different thinking modes with the teacher-researcher because of cultural and age differences, which poses more difficulties to teachers.

In addition, from two cases in section 5.2.2, it can be argued that students will find it hard to make visual link if the characters’ meanings are too abstract or the shapes are overly complicated. Therefore in order to guarantee a smoothly running class, it is essential that the teacher prepare a reasonable explanation in front of class. Considering the foregoing, teaching all the characters using the modernised pictographic principle will overwhelm the teacher-researcher. Other methods are needed to diversify thinking methodologies as well as fully activate the students’ prior knowledge.

5.3.3 Strategies of Making Full Use of Modernised Pictographic Principle in Character Teaching

The strengths and limitations of applying the modernised pictographic principle in teaching Chinese characters to beginning Australian learners have been discussed above. In the section to follow, the teacher-researcher will render advice based on teaching experience on how to give maximum play to the principle in Chinese character teaching.

5.3.3.1 Getting Students Involved in Character Teaching

From the teaching experience with the character 日 (day& sun) and the character 头 (head), it is clear that students have their unique modes of thinking and rich creativity, and that, because of cultural and age differences, they have different understanding towards characters. Involving students’ imagination can reduce the possibility of invalidation caused by cultural differences. From a constructivist perspective, learners use personal experience as a foundation on which to build knowledge. Learners must be actively engaged to construct and interpret individual meaning. Such involvement in a learning task is assumed to stimulate deeper information processing (Kuo & Hooper, 2004; Wittrock, 1990).
In addition, students’ engagement in learning characters will be significantly enhanced when they give their creativity full play. Remembering with self-generated mnemonics sometimes out-performs the effects of teacher-supplied mnemonics. In the analysis of the character 头 (head), students finally chose their own mnemonic to assist with memory. In Mantyla and Nilsson’s (1983) experiment, subjects were encouraged to create mnemonic cues to learn words, but were given either their own or others’ cues for retrieval. Not only did the mnemonic groups outperform a control group, but the subjects performed better when they used their own cues rather than supplied ones. In conclusion, engaging students’ creativity in their learning of Chinese characters is vital.

5.3.3.2 Adding Verbal Cues to Consolidate Students’ Memory

From the examples and analysis discussed above, we can see the cases involving both verbal and visual explanations can achieve a better effect, as in the case of the characters 吃 (eat) and 八 (eight). With a verbal explanation, students can better understand the information conveyed by the picture, and can remember the character shape as well as its meaning better. The vital role of verbal explanation is supported by the dual-coding theory put forward by Paivio.

Dual-coding theory (Paivio, 1986) is that the human brain is made up of two subsystems: verbal and visual. The visual subsystem stores the information that is comparatively more concrete, like sounds, images and feelings while the verbal subsystem mainly stocks moderately abstract information, like language. These two subsystems are independent, but the best teaching effect can be achieved when visual and verbal coding happens together. Also, information is better coded when dual rather than single coding takes place because if one memory track is lost, the other still remains. Thus even if students lose the image provided, they can still rely on their impression about the verbal memory to recall the character and its meaning. The theory further proves that adding verbal explanation is helpful for students to remember characters better.
5.4 Conclusion

This chapter focuses on teaching Chinese characters with modernized pictographic principle developed by the teacher-researcher through her real teaching. The new principle is mainly analyzed from two perspectives: teacher-supplied mnemonics and students’ self-generated mnemonics. Two types of images are given to students with the teacher-supplied mnemonics: pictures that draw characters into pictures and indirectly linked pictures. Both of them are found to have their own pros and cons. And some successful examples and unsuccessful examples are given after to show the effectiveness of self-generated mnemonics. Based on the data from interviews, surveys and teacher-researcher’s self-reflective journal, some suggestions are also given at the end of the chapter to make full use of the principle when applying it in real teaching.
Chapter 6 Modern Associative Principle and Other Teaching Methods

6.0 Introduction

The prior chapter introduced the modernised pictographic principle, analysed its merits and demerits, and put forward suggestions of giving the principle full play. However, as discussed at the end of previous chapter, teaching with modernised pictographic characters has demerits as well. Therefore, teaching Chinese characters with only the modernised pictographic principle, which pays most attention to visualisation, is not enough. The associative principle is an important principle in Liu-shu theory, which emphasises the relationship among different parts of the characters. However, as found in 4.3, the traditional associative principle has its own defects. In this part, a modernised associative theory developed by the teacher-researcher in her process of character teaching is introduced. Following this principle, the character is first deconstructed either into Chinese components or into English components, followed by the story-telling to build links between different parts. In addition, other methods are also introduced, including telling the history of character development, making paper-cuttings and playing Chinese character writing games, which were found useful in teaching.

6.1 Deconstruction of Chinese Characters

This part introduces the deconstruction part in modern associative principle. The deconstruction has two varieties: deconstructing into simple Chinese characters and deconstructing into English letters and numbers. Discussion about methods is also carried at the end of each part.
6.1.1 Deconstructing the Chinese Character into Chinese Components

The deconstruction of Chinese characters here is different from the deconstruction of traditional associative compounds. Traditional associative compounds can always be deconstructed into two or more single components according to some certain patterns, such as two or more same simple characters, or a character radical and one or more simple characters. However, due to the loss of iconicity of some character components, the transformation of character meanings, and Chinese character simplification, many character components can no longer be analysed with the original associative explanations from *Shuowenjiezi*. Thus deconstructing characters simply according to their original components no longer makes sense for some modern characters. The character “春” (spring) is a typical example.

The associative compound “春” (spring) was discussed in 4.3. For students, the character is comparatively complicated and hard for them to remember solely through their own efforts:

“I wrote the character 春 (spring) on the board and asked students: “What do you think of the character?” “It’s hard!” A boy said immediately. Another boy answered with exaggerated gesture: “It’s soooooo hard. I can never do this.” (From the teacher-researcher’s self-reflective journals, 24/02/2014)

From the students’ reflections of the character, their fear of learning was obvious. This fear was thought to come from students’ age and inexperience in learning Chinese language. Though they were taught some basic simple characters, they could not put new and strange characters to use without enough help from the teacher. This character is also comparatively complicated. It is not common left-right Chinese character structure, but three-layer upside-down structure. These things make it even more challenging for students to link the form to the meaning by themselves.

Furthermore, as analysed in 4.3.2, because of huge changes of character components, finding a link among three components to imply meaning can no longer work. However, in analysing this complicated character, 春 (spring) can actually be deconstructed into three simple characters: 三 (three), 人 (people), and 日 (sun),
which are all basic characters.

They often appear in other characters, and were taught to students in previous lessons:

After hearing the negative answer from students, I gave students some support. I asked them: “There are actually some simple characters we learnt. Who can tell me what Chinese characters you can see in it?” Students kept silent for a while, then a boy called out: “An open calendar!” I got amazed that he could really find one and he remembered the image I told him about how to remember character 日 (day or sun) so well! “Well done! But what’s the meaning of an open calendar?” “A day?” “Yes! Good job. This character can mean day or sun. Apart from character 日 (day or sun), what other characters can you see?” No one gave me an answer. So I gave them more help. “I also found a number character in it. A number! Have a think, what number character have you learnt? Who can see it?” “Oh!” I saw 4 students put their hands up. I picked up one and she said: “Number three!” “Well done. There is a number three character, 三 (three), in it. And the last character left is 人 (person).” Character 人 (person) hadn’t been taught to students before, so I used the body pose to teach them this character. (From the teacher-researcher’s self-reflective journals, 24/02/2014)

In learning character 春 (spring), students were persuaded to use their prior Chinese character knowledge to learn the new character. At the beginning, students found it tough to link the current character to their prior Chinese character knowledge, which was attributed to the students’ young age and unfamiliarity to Chinese characters. Nevertheless, after some scaffolding instructions from the teacher-researcher, the students successfully retrieved their existing knowledge of Chinese characters and were able to put it to use.

Awakening students’ related prior knowledge in learning brings different benefits. First, linking students’ related prior knowledge with the target knowledge can greatly reduce their anxiety and learning burden. Instead of facing something completely new, they would find themselves familiar with parts of the new character, which decreases the amount of new knowledge to remember. Other research has indicated that using prior knowledge in instructional methods seems to be helpful for students with limited knowledge. (Rias & Zaman, 2013; Pacheco, Henriques, Almeida, & Mendes, 2008). Second, it is a good opportunity to revise and deepen students’ existing character knowledge. Using prior knowledge in acquiring the new automatically encourages students to recall what they have learnt. As discussed in
5.1.1, revision is vital in retaining long-term memory, especially for young students.

Even though deconstructing new characters into simpler forms has so many merits, it is essential to test whether deconstruction is workable for beginning learners in Australia to better memorize character.

After teaching, students were invited to write the character on the white board in classroom:

After showing them deconstructing the character into simple characters, I asked all the students to write the character together with me. I paid extra effort to the stroke order in character writing. After my teaching, I invited in total 5 students to write on the white board. 4 of the 5 students wrote the character correctly, only one student made the top of character 人 (person) too short, which means the top part didn't go out of the first horizontal line. Others all did a good job in both the character writing order and the character form. (From the teacher-researcher’s self-reflective journals, 24/02/2014)

This data from the self-reflective journal above show that four out of five students were able to write the character correctly the first time, and the only mistake that appeared was a tolerable for a beginning learner. This suggests that deconstructing characters into simple ones can be effective for students’ short-term memory.

In the interview with students about their most impressive Chinese character, one girl chose the character 春 (spring) as the one that impressed her the most:

**Student N:** I like the 春 spring character because I like how it is three different characters joined as one, and that's how I remember it. (Focus group interview, December, 2014)

This teaching method is supported by the prototype theory of cognitive psychology. The prototype view is a product of 1970s cognitive psychology, mainly due to Rosch’s ground breaking research of the internal structure of categories (Murphy, 2002; Geeraerts, 1989). According to the prototype theory, knowledge exists in the human brain with the form of web. Some knowledge stays in the center while some stays at the edges. The knowledge in the center is the prototype knowledge, which is easier to be extracted and memorised.

In learning Chinese characters, the simple and basic ones can be viewed as “central knowledge” while the complicated ones are the “edge knowledge”:
一般说来，人们对范畴的习得是从对范畴中心成员的认知开始的，随着对范畴认知的深化，人们对范畴边缘成员的认知深度和广度也都相应提高。（Wu, 1998; Wu & Chen, 1994)

Translation: Generally speaking, people’s acknowledgement of knowledge starts from the central one. With deepening understanding of central knowledge, the depth as well as width of cognition for the edge knowledge will also be greatly enhanced.

In conclusion, using central knowledge – the simple character knowledge – to acquire the edge knowledge, the complicated character, is considered to be effective.

Apart from helping students better acquire character knowledge; it is also found that teaching through deconstructing the characters can help to improve the accuracy of students’ character writing. Different from the written characters taught with the modernised pictographic principle, no circle or other incorrect stroke appeared. As in the analysis in 5.3.2, one cause of the nonstandard stroke is because students are easily attracted by pictures, and lean toward writing the character the same way as drawing a picture. However, when students were taught with deconstructing Chinese characters, they remember Chinese character along with other Chinese characters, thus their writing is less likely to go astray.

However, in the second week of revision, it was found that problems still existed in teaching only with deconstructing Chinese characters into Chinese components:

Last week, I taught students character 春 (spring) with deconstructing it into simple Chinese characters. So at the beginning of class, I asked students: “What is this 春 (spring) composed of?” I asked the question with different ways for three times, and every time I saw more students put hands up. At last, there were around 10 students raising hands. I picked up a girl and she said: “Three and a calendar.” “Well done, what about the last one?” “I can’t remember.” “That’s ok. The last character is 人, means person. So does anyone remember what the character means?” There were around only 3 students’ hands up. A boy answered with hesitation. “Does it mean festival?” “Not really, any different answer?” Another boy answered: “A house?” ”No. It is a season. What is it?” “Oh!! Spring.” A girl called out. (From the teacher-researcher’s self-reflective journals, 03/03/2014)

Students’ reaction in the self-reflective journal above shows that after one week, they still had the impression of deconstructed simple Chinese characters. They had no problem remembering characters “三”(three) and “日” (sun), but not the character
“人” (people). It is possibly because they learnt “三”(three) and “日”(day or sun) before, so these two characters were used as prior character knowledge in learning the new one, while “人”(people) was a comparatively new character to them. From the journal above, one flaw of this deconstruction method was apparent that is, if the simple character applied is also new for students, it might add extra learning burden. However, as analysed above, it should be acknowledged that simple characters are the basis for learning Chinese characters, which means they are essential for students’ future learning of Chinese characters.

Another problem discovered was that students were not quite clear about the meaning of the character. The meanings of the three deconstructed simple characters had no close link with meaning of the character “春”(spring). The appropriate link to help students retain memory of the character meaning was absent. The teacher-researcher was reminded that after deconstruction, an appropriate link is needed to build back up, which the teacher-researcher calls reconstruction. This will be further discussed in 6.2.

6.1.2 Deconstructing the Chinese Character into English and Number Components

The last part introduced that using students’ prior Chinese character knowledge to learn new Chinese character is useful. Nevertheless, in her teaching process, the teacher-researcher found that some of her Australian students were keen to use their native language, English, and number knowledge, to learn Chinese characters. The teaching strategy of deconstructing Chinese characters into English letters and numbers was put forward and is examined in the following analysis.

The idea of deconstructing characters into English letters and numbers was first put forward by the students when they were being taught the character 水 (water). In traditional Liu-shu theory, “水”(water) is a character classified as a pictographic character. But as discussed in 4.1.2, the character is not suitable to be taught with this principle because of the character form transformation. The students agreed that the
oracle bone character “ воду” was very much like real water (a river), but did not see a similarity between the modern character “水” (water) and its oracle bone form.

However, the mnemonic for this character later came from students when they were taught to write the character:

After showing them the image of oracle bone character, I asked students to write the character together with me. While we were writing, a boy called out: “It is 7, J, K.” I was amazed at his idea. Apart from the amazement from me, I also heard other students exclaim:” Yeah, it is.” “I see that too.” ”It is 7, J, K.” Compared with the reflection students showed when they heard the explanation from me, they were far more excited with this mnemonic. (From the teacher- researcher’s self-reflective journals, 24/03/2014)

Carrying out careful analysis, it can be seen the character is actually composed of 7, J, K. For the character 水 (water) the horizontal line and diagonal line together at left is like a number 7. The vertical line in the middle with a tick is like J and the vertical lines in the middle together with the two diagonal lines at right are like a letter K. In this process, instead of deconstructing the character into simple Chinese components, students deconstructed them into English letters and numbers. This example and examples in 5.2 show that when students do not accept the mnemonic from the teacher, they would seek to remember it with something they are familiar with. Carrying out analysis about students’ mnemonic for character 水(water), apart from their visual knowledge, which can be seen from the examples in 5.2, students also used their L1 (first language, English in this case) knowledge to retain memory.

Applying L1 in L2 learning is an irresistibly natural process for beginning learners. This also happened when the teacher-researcher (L1 is Chinese) was first learning English (L2), she used Chinese characters to mark English pronunciations. L2 learners access their L1 while processing the L2. Cook (1992) suggested “the L2 user does not effectively switch off the L1 while processing the L2, but has it constantly available.”. In addition, using L1 in L2 learning happens more often for young age group. Compared with high-ability L2 speakers, the phenomenon of using L1 language is more obvious for L2 speakers of lower ability (beginning learners) because their L2 knowledge was not enough for them to rely on. Upton’s (2001) experiment found that a lower ability group used L1 more than the higher ability.
group when confronted with unknown L2 vocabulary.

Applying L1 in their learning of L2 can be helpful for beginning learners. Since students are comfortable with and quite proficient in their first language, they would feel less pressured if they had some assistance from their L1 when facing new L2 knowledge. By finding the common place between L1 (English) and L2 (Chinese), new knowledge would be easier for them to understand and retain in memory. According to the “dual-iceberg” analogy proposed by Cummins (1983), L1 and L2 are superficially separate proficiencies, but in essence, they overlap and share certain abstract universal principles and constraints. L2 learners express their language proficiency in two different modes, i.e. the native language and the second language, but skills, knowledge and concepts developed in L1 can be easily transferable to L2. (Yan, 2010)

In her following week of teaching, the teacher-researcher examined the effects of deconstruction using English components to teach Chinese characters:

Since I taught them character 水(water) last time, I began class with reviewing it. I gave them the clue that the character is composed of three parts: 7, J & K and invited three of them came to the front and wrote the character on whiteboard. The first student and the second student made the shape of the character correctly, but they wrote from left to right, which is the wrong stroke order. I pointed it out, and asked them to write it again. The third student made seven at almost the top of J. I corrected her, and emphasised that number 7 should be written in the middle of J, not at the top. (From the teacher-researcher’s self-reflective journals, 31/03/2014)

From testing the students’ memory of character “水”(water) at the beginning of the class, it can be seen that the students still had some memory of it and could write it in basically the correct way when they were given hints. Considering students’ age and the interval time of one week between lessons, the effect of resorting to the students’ English knowledge in their learning of Chinese characters can be considered effective.

However, during the students’ writing, some problems appeared. First of all, this method does not help the students’ to learn the Chinese character writing order and Chinese character writing form.. Due to students’ comparatively poor Chinese character knowledge, they lacked awareness of the character writing order. In this case, the students wrote the characters in English writing order, from left to right (7,
J, K), while the correct order should be J, 7, K. And just like the problem analysed for modern pictographic principle, using English and number may be misleading for students’ character writing form because students write according to English letters and number, rather than the real Chinese characters forms.

The second problem, as mentioned at the end of the journal, was that the necessary link between the explanation and the character meaning was still absent, the same as the deconstruction of characters into Chinese components. The story used to link it to the character meaning will be further discussed in 6.1.2.

It is important to notice that the students should occupy the central place, as opposed to the teacher-researcher, in developing this method:

In remembering the character 

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(five), I told students an explanation that there are five straight lines in the characters, so the character means five. Nevertheless, when I was writing it, a student put his hand up and told me: “Miss Wu, I can actually see the English word five in it.” Word five? I never thought of it in this way. “Yeah, I see it too!” I heard 2 or 3 students agree with it, but I still had no idea. So I asked the student to come to front and explain to us. With his finger, he traced out the four letters he found in the character. (From the teacher-researcher’s self-reflective journals, 31/03/2014)

Without help from the teacher, the students used their L1 (English) knowledge to make links. They had greater sensitivity than the teacher in applying English to assist imagination because English was student’s first language, and they will analyse Chinese character using English.

Nevertheless, one needs to be aware of the limitations of this application. The main limitation lies in the huge difference between English and Chinese. English is an alphabetic language while Chinese is a symbolic language and similarities between them is not easy to find. Ringbom (2007) found that a learner who knew only Indo-English found it extremely hard to learn Chinese in the beginning because he found little relation with his prior linguistic knowledge. He concluded that “the zero, or near-zero, relation of Chinese to English poses great difficulties at the early stages
of learning”. Singley & Anderson (1989) said “the worst possible transfer situation is when there is no overlap between two sets of production, in which case transfer is zero, not negative.” All in all, similarities between English and Chinese do exist in some words, but not many. Thus it should be recognised that it would be very challenging to deconstruct some Chinese characters into English and number components.

6.2 Reconstruction: Story-telling

The preceding part discussed deconstructing Chinese characters into either English and number components or Chinese character components. Both of them had their pros and cons. Nevertheless, for both of them the same disadvantage existed – the lack of an essential link between the deconstructed components and the character meaning, which means deconstruction can help students recognise and write characters, but not remembers their meaning. Thus as discussed above, a link is necessary between the deconstructed components and character meaning, “reconstruction”, which will be introduced in this part:

Today morning, when I stepped into the 5/6 W’s classroom, I found a girl stand in front of the class and happily share the story of her trip to Antarctic Pole in holiday. The rest of the class were excited and showed their strong desire to go Antarctic Pole too. I’ve seen students sharing their own stories in class for many times in the past one year, from kindergarten to year 6. Telling their daily interesting stories in the class is actually one of their class routines. (From the teacher-researcher’s self-reflective journals, 31/03/2014)

When the teacher-researcher was observing the local class teacher’s class, she found that storytelling was part of their daily class routines. Students love to tell and listen to stories. The story-teller was quite happy to tell others’ her own story, and the rest of the class were interested and engaged. People are ‘storytelling organisms who, individually and collectively, lead storied lives . . . and tell stories of those lives’ (Nicholas & Abbott, 2011; Connelly & Clandinin, 1990, p. 2)

Storytelling is also common in second language learning. Rinvoluturi (2008) described storytelling as the oldest technique in second language (L2) learning. (Nicholas & Abbott, 2011). Literature can be used to motivate and engage learners and assist them in noticing connections between form and meaning. Nicholas&
Abbott (2011) concluded, “Literature does have something very special to offer to language”. The teacher-researcher decided to use story-telling to create links for the students.

As discussed earlier, the character 春 (spring), was deconstructed into three simple characters: 三 (three), 人 (person), 日 (day and sun). Due to a lack of necessary link, the students found it hard to remember the Chinese character meaning in the following class, and so a story was told to help them better remember:

In order to help students better remember the character meaning, I thought of the internal meaning of number three in Chinese culture. It can mean the actual number three, and it can also be the biggest number, means numerous. I told students the number three’s culture meaning and the story I made up, that only under the sun, three people (I, you and he & she, which can represent all the people in the world) can live dynamically, and spring is a dynamic season. After hearing the story from me, students, however, were not as interested as I expected, and some of them even looked a bit confused. (From the teacher-researcher’s self-reflective journals, 03/03/2014)

Since I’ve taught students the deconstruction into Chinese characters as well as the reconstruction story, I checked students’ memory for this character this week. I picked up a student, who was one of the top ones in class, and asked if she still remembered the character. She said yes and told me the English meaning of the character was spring. But then I asked her the story I told her last week. She hesitated for a while and answered: “It's three… sun… I can’t remember.” (From the teacher-researcher’s self-reflective journals, 10/03/2014)

In light of the students’ failure to remember the meaning of 春 (spring) when they were only taught using character deconstruction, the story was created to reconstruct the link of the character deconstructing components with its character meaning. However, when reviewing the character the week after, the story didn’t play as much importance as as expected. The student chosen could remember the meaning, but not the story. Her performance in remembering the meaning may be attributed to her above-average learning ability as she was a top student, or to the continuously teaching and revising of this character, as well as other character activities, like paper cutting (this will be further discussed in a later chapter). Her failure to remember the character story suggests it did not help her memory of the character.

The failure of the character story can be caused by two reasons: first of all, the connection between the story and the character meaning was not logical or direct
enough. In other words, the story may do very little help for students in better remembering character meaning. In this situation, the story could even have added extra burden for students because the students needed to remember the story as well as the character meaning. Secondly, this may also have been brought about by the cultural difference. The teacher-researcher created this story in her Chinese way of thinking, and the students may have found it hard to understand or simply too different, because it involved some Chinese culture. Further exploration of reconstruction was still needed.

Comparing the teacher-researcher’s character story and the Antarctic Pole trip story as told by the student, the major differences lie in the involvement of the students and the factuality of the story. The trip story is real, and something students are familiar with, which means their involvement is higher compared with the “three people under the sun” story.

In a subsequent class, the teacher-researcher gave the students a chance to make up their own character stories:

I first of all wrote the character 水(water) on white board, and asked: “Does anyone remember what this character is composed of?” I only saw 2 students’ hands up, and most of them kept silent. So I gave them a further clue: “It has a number 7… and what else?” “Oh!” I saw more students quickly put their hands up. I picked up one girl, and she quickly said: “7, J and K!” “Well done!” (From the teacher-researcher’s self-reflective journals, 31/03/2014)

A week later the students were still able to remember in exactly the same way of deconstructing the character. Therefore, it proves the effectiveness of the character deconstruction. Perhaps it is because English is their first language and students are familiar with using it to analyse unfamiliar things.

In addition, the teacher-researcher tried to persuade the students to propose the mnemonic by students themselves, so they could easily see it with little help from the teacher-researcher:

I then asked students: “This character means water, right? And the character can be separated into three parts: 7, J and K. So use your imagination and tell me, why 7, J and K have something to do with water?” Students stared at me and looked a bit confused. It might be too challenging for them, so I simplified my question a little bit. “OK, so when you see the two letters: J and K, can you think of something related to
water?” “Yeah, the jetski! My father did that yesterday! It was pretty cool.” A boy called out. I didn't quite clear about what jetski is, sounds like a water sport, but other students all got excited and asked him about it. What’s more, yesterday is the Sunday, the seventh day in a week, so 7 is also included. Perfect! So I told students: “So we can remember the character with the story that Jack (the boy’s name) went to play jetski on the seventh day of a week, and jetski is a water sport.” (From the teacher-researcher's self-reflective journals, 31/03/2014)

In this case, instead of telling a story made up by the teacher-researcher, the students were asked to tell stories from their own lives. They were excited by the story from Jack, and since jetski is not new sport to the students, they found it easy to understand:

Today I was teaching students the sports word, 游泳 (swimming). I first showed students the characters and told them to guess what this sport is. This sport closely related to water because it has water radical (氵) in it and the water radical (氵) is the short for character 水 (water). A girl called out excitedly: “The jetski!” I wasn’t realize at the beginning, then it came to my mind that she is talking about the character 水 (water). Though she didn’t tell the right answer, I am still so happy to find out that she still remembered the story about character 水 (water). (From the teacher-researcher’s self-reflective journals, 05/11/2014)

The data from the self-reflective journal show that six months later the girl could still remember the story I had improvised and put to use. Telling the students’ own stories to create links for remembering Chinese characters can be effective.

There were some obvious advantages in having students tell character-related stories using events from their lives. Telling a real-life story was a classroom activity with which students were familiar, and in which they would be happy and comfortable to participate. Their interest and involvement in class was enhanced, as witnessed by their excitement in listening to the jetski story. Learners’ own stories are a rich source of authentic material which provides a genuine purpose, emphasises real-world goals, fosters classroom interaction, and promotes engagement (Nguyen & Stanley, 2014; Guariento & Morley, 2001). The students’ learning listening to a real-life story, something that really happened, containing an inherent logic that is stronger than one that was invented, also reduced load. By remembering the story, their memory of a character was improved in all respects: character meaning, character recognition and character writing.
6.3 Assistant Character Teaching Methods

In this section, three assistant teaching methods are introduced, which are teaching with character developmental history, teaching with handicrafts - the paper cutting, and teaching with Chinese character writing games. Teaching process is demonstrated. Merits and demerits of each method are also discussed.

6.3.1 Teaching Chinese Characters with Character Developmental History

As discussed in the chapter above, telling a story is considered an effective teaching strategy, which can not only raise student interest, but also help them better remember and understand Chinese characters. In Chapter 2, it was mentioned that due to China’s long history, Chinese characters experienced considerable transformation, especially in their shapes. Some modern characters have completely lost any similarity to the originals, while some characters still retain a little. Therefore, in teaching Chinese characters, to help students better understand and remember them, describing characters’ developing history in story form, using different character forms as examples, is considered to be a good teaching strategy.

The number “四” (four) was the first character the teacher-researcher effectively taught with the history of Chinese character development. In the book The Tao and Its Characteristics, written by the ancient Chinese philosopher Laozi, there is a saying: “一生二，二生三，三生万物.” (One is the child of the divine law. After one comes two. After two comes three. After three comes all things.) This old saying illustrates the special place of the number ‘three’ in Chinese traditional culture. It can represent the real “three”, or many other things, or even everything in the world. Thus four is a dividing number in Chinese culture, and one reason why the character for four is not composed of four horizontal lines.

In Shuowenjiezi, Xu (100 AD) explained the character 四 (four) as: “四，阴数也。象四分之形。凡四之属皆从四.” (Four is a yin number. It represents the shape of dividing things into four. All the characters related to number four use 四 as the
radical.) However, “the shape of dividing things into four” can still be confusing because four split parts in the character are not obvious. But after looking up the character’s developmental history, the explanation makes more sense.

Therefore, the teacher-researcher decided to use the developmental history of this character to explain the character to the students:

I thought of the developing history of the character, which is interesting and worth trying. I raised another question: “Is anyone curious why Chinese people put two curving lines in the middle, what they represent?” When students heard this question, they kept quiet and none of them put their hands up. Then I gave them my explanation: “This character also has its own history. Ancient Chinese people thought we should write four with four lines - 井. However, four was considered to be a dividing number in Chinese culture, thus people wanted to make it more special, so they turned it into four vertical lines - 四. But does it look like a Chinese character? Most students replied in negative way. “4 is made up of 2 twos, right? In order to make the character look nicer, people decided to put a character two on it and the character became 二. Slowly, people made two curving vertical lines and the character became what it now looks like. Does the explanation make sense to you?” Many students replied positively. “Yes, it’s interesting and different.” “Thanks Ms Wu for telling us about the history of the character, it is really interesting.” A boy said that loudly after hearing my explanation. (From the teacher-researcher’s self-reflective journals, 21/07/2014)

It was a concern before the class whether this explanation would be too great a challenge for students in Stage 3, but from students’ reaction, they seemed to accept the idea well. According to the boy’s answer, the students even found it stimulating and interesting to know how the character resulted in its present form. It can be inferred that developmental history of Chinese characters cannot only help students better learn Chinese characters, but also stimulate their interest in learning them. In addition, Chinese traditional culture as conveyed through Liu-shu theory will benefit students’ understanding of it, such as the meaning of three. This will further help to enhance their enthusiasm.

Character 黑(black) is also a character taught with the character developmental history. The explanation from Shuowenjiezi was also first considered: “黑，火所熏之色也。从炎，上出困。” (Black is the color of a fire’s smoke. The character belongs to the fire category.) This explanation explains the meaning of the character in a simple way, but does not mention the transformation of the character shape, which
doesn’t really help students’ character reading or character recognition. The idea of using the explanation from Liu-shu theory is thus abandoned.

As with other characters, the teacher-researcher gave students a chance to try to figure out the link of the character shape to the character meaning by themselves first:

I first asked students if they could establish any relationship between this character and its meaning. Most students found it hard. There was only one student in class said that the four dots at the bottom look like fire. And I asked what about the top part. And he said it looks like a house. (From the teacher-researcher’s self-reflective journals, 10/03/2014)

Only one student was confident enough to answer the question, and even this student was not able to suggest a reasonable link. It can be concluded that trying to think of links by themselves was too challenging for the students. It became clear what was necessary:

To explain the character, I first showed students the character 黑(black)’s different forms.

To explain the picture better, I told the evolving process as a story. “At the very beginning, oracles wrote 黑(black) in this way, 黑, which means a person sitting besides the fire is black. However as time passes, people started to realize that a single person was not enough to show the meaning of black, and easy to get people confused. So they added two extra dots at the person’s face 黑, which meant two dots of ashes from the fire. Later on, people recognized it was still not clear enough and decided to add some fire at the bottom, 灯, which means a person sitting beside the fire makes him look black. If we write the character in the modern Chinese character way, it would be 黑(black). The bottom part is the fire radical. Whenever you see the radical in other characters, the character must have close link with fire.” (From the teacher-researcher’s self-reflective journals, 10/03/2014)

Based on the story analysis, the students’ answers in interviews and survey result it
was found that the students’ interest in this character was greatly enhanced and their memory of the character 黑 (black) was strengthened.

When the interview was carried out, students were asked which character left the deepest impression on them. Several chose the character 黑 (black) as the one they remembered best:

**Student A:** I like black because black is my favorite color. It’s pretty obvious cause you know that it’s basically fire, and from fire it comes ash, and ash is black color.

**Student C:** I would say the character for black, which is the second from the middle row. That you told us it is a guy sitting by fire and the ash on his face help me remember it.

**Student F:** I think the one for black. It is the same as I remembered. Because the ash is one the face, represent the black. The things below are the fire.

**Student G:** And the black (pointing at 黑), because of the fire and the person, with ash on his face. (Focus group interview, December, 2014)

Among the 15 students who participated in the interview, four of them – almost 25% of the students - chose 黑 (black) as their best-remembered character. They were able to clearly and correctly tell the meaning of the character, showing the students remembered the character well. More importantly, when explaining how they remembered the character, all students were able to point out the ash and the fire at the bottom, which proved that the story helped them recall the character so well.

The classroom teacher also agrees that students enjoy listening to stories about Chinese characters.

**Classroom teacher A:** I think most students in my class enjoy characters, particularly I think they enjoy the idea of listening to the developmental stories to help them remember the characters. (Individual interview, December, 2014)

Later, when students were asked what they considered the best strategy for them to keep characters in mind, the idea of listening to the story of how the character developed, together with the process of its transformation, proved to be very popular.

One of the interviewees gave clear explanation of why he enjoyed the character evolution process:
**Student E:** I think the best one for learning is when you showed us how it developed over the years. Cause at the beginning you can tell they are simple pictures and when you develop them, you can sort of still see the picture. And I found that easy to remember. (Focus group interview, December, 2014)

A reason why Llewellyn liked the strategy was because through the telling of the story and showing forms of the character’s evolution, he was sable to find a link between the modern character and the original, even across a history of more than 5,000 years. What’s more, through knowing the original character, he is able to better understand the meaning the character conveys. Why people write a color in this way? What does each part of the character mean? All the answers can be found in the story.

Apart from the above methods for teaching modernised Chinese characters, other activities also took place in class to help students’ memorising Chinese characters.

### 6.3.2 Teaching Chinese Characters with Handicrafts:

**Paper-cutting**

Paper cutting is a traditional Chinese handicraft, called 剪纸 (jiǎn zhǐ) in Mandarin. Paper cutting patterns are various. Chinese people use certain simple characters, such as 春 (spring) and 喜 (happy), as patterns for paper cutting to express their good wishes. The character 春 (spring), previously referred to, was taught to the students with deconstruction and reconstruction in the modern associative principle, and paper cutting was subsequently used as an assisting teaching method for their Chinese character learning.

There are advantages in using paper cutting. As a traditional Chinese handicraft with more than 2,000 years of history, paper cutting itself is an important part of Chinese culture. Different patterns are used to express peoples’ happiness or best wishes.

Through appreciating the paper cuttings as well as making some paper cuttings themselves, the students could gain a better understanding of Chinese culture:

剪纸起源于古人祭祖祈神的活动…是汉传统文化的一个组成部分，是传统信仰与人伦道德的缩影，也是观察一个民族的民俗风文化传承的
Translation: Paper cutting originated from the ancient people’s ancestor worship… It is an important part of Chinese culture, is the epitome of Chinese traditional culture as well as human ethics and morality. It is also a window to see a nationality’s culture heritage.

Apart from its culture content, paper cutting is also easy to do, giving students a sense of achievement. Preparation for paper cutting is easy – some colored paper and scissors. After showing them the process and providing patterns, they did it with little help from teachers:

After being showed how to fold the paper and the paper-cutting pattern, students started to do their paper cutting themselves. About 7 minutes later, a girl finished first. She was so excited and eager to show me: “Miss Wu, I finished! It is really a spring character!” Later, more and more students finished. Some of them came up to me and asked: “Can I take it home?” And I also heard a boy murmur: “I did it! I’m a genius!” It seemed that students all enjoyed the paper cutting. (From the teacher-researcher’s self-reflective journals, 03/03/2014)

The reflective journal expressed the students’ surprising exclamations and eagerness to take their paper cutting work home, showing their satisfaction and pride in the paper cutting work, and giving them a sense of success.

The students loved hanging their work as classroom decorations; paper cutting was an appropriate choice because it was originally used by the Chinese to decorate their homes.

There is a Chinese idiom, “潜移默化” (qián yí mò huà), which means people can be slowly influenced by what they have in their environment. In this case, 春(spring)
paper cutting became part of the classroom. By seeing the paper cuttings every day, the students would have improved memories and impressions of the character subconsciously.

However, in using paper cutting for teaching Chinese characters, there is one important factor that needs to be considered, that paper cutting is more suited for teaching characters which are symmetrical such as 春 (spring) or 喜 (like). Otherwise it may require engraving or the trimming of very small pieces, like character 福 (blessing) or 寿 (longevity), which would be too challenging for Stage 2 and Stage 3 students to finish by themselves.

6.3.3 Teaching Chinese Character Writing with Character Writing Games

The huge difference between Chinese characters and English words, coupled with the students’ lack of familiarity with the characters makes remembering them tremendously difficult. Through the use of strategies introduced in previous chapters, the students’ load in understanding and remembering characters can be greatly reduced.

However, to learn a character thoroughly, it is also important to learn the character writing. So in character teaching, writing practice is also necessary:

Today, after teaching students the character 国 (country), I asked students to trace the grey characters and write it for 10 times. However after being quiet for about 10 seconds, students started chatting. The whole class became quite noisy and the classroom teacher had to ask students to stop being noisy in the end. (From the teacher-researcher’s self-reflective journals, 03/10/2014)

From students’ reflections, that they chatted and behaved noisily, it was obvious that they were not involved in the writing practice. However considering the nature of most Australian Stage 2 and Stage 3 students, which can be described as restless and competitive, it can be understood that repetitively performing a tracing and writing activity is too boring for them. Students are easily distracted. This experience made the teacher-researcher realise that some fun methods were needed to get students
involved in character-writing practice. Playing character games is an obvious choice.

There were two character-writing games developed in the teacher-researcher’s character teaching process. Rules for both of the games are below.

**60 second dash:**

1. Give each student a blank piece of paper.

2. Write one character that students learnt on the white board.

3. Set a timer for 60 seconds and ask students to write down as many characters as possible. The characters have to be written correctly. The one who writes the most characters will be the winner.

**Bingo game:**

1. Give each student a piece of paper with a table of nine boxes.

2. Ask students to fill in the boxes with the Chinese characters for certain words learnt in previous lessons.

3. Teacher says three words randomly in Chinese after the students have finished. If students have that word, they give that box a tick.

4. If a student gets three ticks in a straight line (horizontal, vertical or diagonal), he/she needs to yell out “bingo” immediately and wins the game.

Though these two games seem different, in designing and playing them, two similar and important factors are taken into consideration. One is that playing the game requires the students to do character writing practice. The other consideration is that games are comparatively competitive, so that students can get students focused and involved. These two games were played several times in class with the purpose of revision and practice.

In the interviews, when students were asked their favorite way of learning and remembering Chinese characters, playing the character-writing games was the most popular.
Student D: I like the bingo and 60 second dash game because it’s fun, but you are learning while you are having fun.

Student G: I like the 60 second dash cause it’s a bit competitive but at the same time we are also learning like how to draw the characters.

Student F: I like 60 second dash as well because in writing it down as many times as you time in 60 seconds. For me it helps you memorize it because you can write it down, and that for me, it helps me memorize and form pictures in your mind.

Student M: I like the 60 second dash game because it writes in a time for us to practice, the stroke order and how many you could write one character.

Student N: I like the 60 second dash because you have to write the characters and it gets stuck in my head.

Student C: Bingo. Bingo game you can do with characters. So if you do the character and you say it, you have to remember what character it stands for. So it is a good memory game. (Focus group interview, December, 2014)

Of the 15 students who participated in the interview, six chose the character-writing games as their favorite way of memorising Chinese characters. The games were competitive and fun, so the students enjoyed playing them. In addition, since the games involve character-writing practice, the students found themselves more proficient in writing and remembering the characters’ shapes and stroke order.

6.4 Discussion of This chapter

This section talks about the methods introduced above: modernised associative principle and other assistant character teaching methods. Advantages and disadvantages for them are listed and discussed.

6.4.1 Discussion of Modernised Associative Principle

In 6.1 and 6.2, examples were given of using the modernised associative principle to teach beginning learners Chinese characters in Australia. The modernised associative principle is made up of two main steps. The first is deconstructing characters into Chinese components or English and number components, and the second step is using story-telling to reconstruct.
6.1 Process of Modernized Associative Principle

When deconstructing into its components, if the Chinese character can be easily separated into a radical and simple Chinese characters in accordance with the traditional Liu-shu principles, the deconstruction is acceptable. However, when it involves comparatively complicated characters, and the traditional deconstruction doesn’t make too much sense, the character can be deconstructed. In teaching, it was found that deconstruction into simple Chinese characters could make full use of the students’ prior Chinese character knowledge, which reduces their burden in learning new Chinese characters, revises old character knowledge, and improves the students’ character-writing skill at the same time. The deconstruction process is in accordance with the prototype theory of cognitive psychology. It involved the natural learning process of using central knowledge, the simple Chinese characters, to learn edge knowledge, the complicated characters. Nevertheless, the main problem lay in the extra burden resulting from the students’ deficiency of simple character knowledge.

Deconstruction can also be done with English letters and numbers, but in doing this, students are more sensitive than the teacher-researcher, so their initiation in finding English and number components in Chinese characters should be fully encouraged. By using their L1 knowledge (English) and prior number knowledge, the students’ fear and learning load of new Chinese knowledge can be greatly reduced because of their familiarity with their first language, especially for beginning learners. But limitations exist in the character writing order and form. Students tend to write in line with the English and number forms, instead of Chinese characters. Another defect is caused by the huge differences between the two languages, which leads to
find points of similarity challenging for some characters. Thus using English number deconstruction would be challenging for many Chinese characters.

For both methods of deconstruction, disadvantages always lie in an insufficient link with character meanings. Thus story-telling is used to reconstruct the characters.

In analysing the examples of reconstructing the characters 春 (spring) and 水 (water), it was found that using students’ real-life stories were most effective. Because of the ring of truth of the stories, the students’ interest in the story and in the characters increased; and recalling the story can help students remember both character form and character meaning, reducing their learning load.

Wu (1998) researched the teaching of Chinese characters with cognitive psychology and has the finds below:

可以把这几类汉字作为汉字教学的基本字(十画以内，结构简单的汉字),等学生熟练掌握了基本字的用法后,再运用结构解剖和联想记忆的方法,就不难帮助学生习得结构更复杂的汉字。这种教学方法把汉语识字教学设计成一个从已有知识向新知识发展的过程,把学生已习得的知识变成进一步学习的推动力和辅助工具,这不仅符合认知心理学的记忆原理,有助于学生提高对汉字的习得效率,而且也符合“后次复习前次”的教学原则。(Wu, 1998)

Translation: Teachers can use the simple characters, which have fewer than 10 strokes, as basic ones for character teaching. After students know the basic ones well, teacher then can use deconstruction and association to help students learn more complicated characters. This teaching method makes Chinese character teaching into a developing process from prior knowledge to new knowledge; it also uses the learnt knowledge as the impetus and assistant device for further studying. These entire not only comply with memory principle of cognitive psychology, but also accord to the “reviewing old knowledge while teaching new knowledge” principle.

6.4.2 Discussion of Assistant Character Teaching Methods

The data and analysis from the self-reflective journal above introduces three assistant teaching methods: teaching with character developmental history, teaching with handicrafts: paper- cutting, teaching with character writing games.

Character developmental history and paper- cutting can help the students with their character recognition. In using the character developmental history, it is first
concerned that telling story is a very good teaching strategy. It can help raise students’ interest, enhance their character memory and deepen their understanding of Chinese culture. Similar effect found on using paper-cutting to teach students the Chinese characters. Students’ interest is greatly improved, a sense of achievement is acquired, and memory is largely deepened because paper-cutting can be hung in classroom as decorations. In addition, due to the Chinese culture the paper-cutting carries, students can have a better understanding of Chinese culture. However, attention should be put on the choice of characters. The systematic characters are more suitable to use paper-cutting, while asymmetric characters are not.

The Chinese character writing games are found effective for students’ character writing. The games are competitive, which get students more engaged and reduce the irritancy of character writing practice. The games always involve character-writing practice, which helps students familiar with the characters’ writing and recognition.

6.5 Conclusion

Chapter 6 introduces modernized associative principle as well as some assistant character teaching methods. Modernized associative principle is composed of two processes: deconstructing characters into Chinese components or into English and number components. Story-telling is used after as the reconstructing process to build up students the link between the deconstructing components and character meaning. Assistant character teaching methods include teaching Chinese characters with character developmental history, teaching Chinese characters with Chinese handicraft: paper-cutting, and teaching Chinese characters with character writing games, which includes 60-second dash and bingo game. The benefits and harms of each method is later examined and analyzed according to the data from the teacher-researcher’s self-reflective journal and surveys as well as interviews with students.
Chapter 7: Conclusion

7.1 Introduction

This chapter will first review the main content of the previous chapters 1-6, and discuss the research as a whole. Then the chapter will illustrate the key ideas of the research, and list the main research outcomes as well as how this research resolves the research gap through answering the research questions. At the end, it also represents the limitations of this research and recommendations for further research.

7.2 Key Findings

The research focuses on developing Liu-shu theory, combined with western L1/L2 transfer theory, into pedagogical framework to be employed in teaching Australian students in their Mandarin class. Based on the data from self-reflective journals, interviews and surveys, as well as the analysis about them, the key findings are crystallized mainly around three questions: What is Liu-shu theory and how has it been used in teaching Chinese as first language and second/foreign language? Is traditional Liu-shu theory suitable for teaching Chinese character to Australian beginning learners in Australian schools? What strategies of Chinese character teaching could be developed and employed in teaching Australian students in their Mandarin class?

7.2.1 Lack of Systematic Research of Applying Liu-shu Theory in Chinese Character Teaching

This question is mainly answered through literature review in chapter 2. The literature regarding explanations of Liu-shu theories as well as the application of Liu-shu theory in current Chinese character teaching are majorly studied. First of all, through reading the literature, it is acknowledged that Liu-shu theory is a character-formation theory, which explains the forming process of Chinese characters. The six
principles are pictographic principle (象形理论), indicative principle (指事理论), associative principle (会意理论), pictographic-phonetic principle (形声理论), rebus (phonetic loan) principle (假借理论) and derivative principle (转注理论).

Second, Liu-shu theory can be considered effective in teaching Chinese as first language. Jia (1998) also strongly argues that Chinese characters should be taught through explaining the principle of character formation. It concentrates on the relationship between sound, formation and meaning. Other researchers also agree that Liu-shu theory is helpful for students to understand the associative rule of Chinese characters, foster students’ sensitivity towards Chinese characters, and review students’ prior knowledge.

Third, apart from using Liu-shu theory as an important tool in teaching Chinese as first language, some researchers also explore teach Chinese as second language. Taft & Chung’s (1999) research is mainly about testing the efficacy of using radicals in teaching Chinese characters. A website called “The Cracking the Code Character Catalogue” (Scrimgeour, 2012) also explores to use radical to remember Chinese characters. Other researches, like Mantzicopoulos & Patrick (2011), Xu (2009), are mainly about using visual ways to teach Chinese characters. The researches find visual methods useful for part of the characters. Ke (1998) and Yang & He (2010), on the other hand, put focus on the logic behind Chinese characters.

However, the teacher- researcher finds the researches above study part of the character teaching, but not systematically and comprehensively. And very few of them put forward new strategy or framework about Chinese character teaching, which is the reason why the teacher- researcher carried out this research.

7.2.2 Chinese Characters’ Transformations Leading to the Failure of Traditional Liu-shu Theory

In applying Liu-shu theory in her real Chinese character teaching, it is found that the failure of putting many explanations from Shuowenjiezi into use are caused by the transformations Chinese characters have gone through in character forms, meanings and pronunciations. As a result, Liu-shu theory is no longer as effective for
explaining characters as it was in the past.

7.2.2.1 Transformations of Character Shapes

Through its long history, Chinese calligraphy took eight forms, including oracles, big seal style, small seal style, and clerical script style etc. In transforming into different styles, characters will experience some change. Some only changed in the way they were written but some became completely different characters. The associative character, for example, when changing form from the small seal shape to clerical script, from (spring, small seal shape) to 春 (spring clerical script), these two characters turn out to be something completely different.

The iconicity of a character is useful reference to examine whether the explanations of character form in Shuowenjiezi work well or not.

Luk & Bialystok (2005) define iconicity as the degree of visual similarity between a character and its referent, and offer this criterion.

The criterion for classifying a character as iconic was the extent to which the character conveyed a stylized image of its meaning by depicting the inherent physical properties of the object and their overall configuration through the arrangement of the strokes. Arbitrary characters lack these structural correspondences. (Luk & Bialystok, 2005)

It is assumed that characters with high iconicity would be easier to teach using Liu-shu theory while those with low iconicity would be more difficult.

So the characters such as 目 (eye), 耳 (ear), 口 (mouth), though with a long history of development, retain high iconicity with original pictures. (see 4.1.1) When students were given the meanings of the characters, they would see the character similarities with real objects and naturally being able to construct the relationship. On the other hand, the iconicity of pictographic characters such as 身 (body), 水 (water) and 日 (sun or day) has become lower. (see 4.1.2) This is also true for the associative character 春 (spring). The iconicity of 草, which means grass sprouts, can hardly be seen. (see 4.3.2) This is true even though most simple characters in
modern Chinese derive from ancient Chinese pictographs that were once easily seen as pictured objects. However, over centuries of use, the characters have become more stylised, such that relatively few still clearly represent the objects that they denote via structural similarity. (Xiao & Treiman, 2012) Therefore when students see characters, though given their meanings, they find them too distant from the real images, rendering the building of a relationship more difficult.

### 7.2.2.2 Transformations of Character Meanings

Apart from character form, the meanings of characters have also experienced change. Because of modern character simplification, characters are added some extra meanings, which do not exist in the traditional Liu-shu explanations. It leads to the failure of using explanations from *Shuowenjizi* to explain. The characters 吃 (eat), originally meant ‘stuttering’, but now carries the added the meaning of ‘eating’ as a result of modern character simplification (see 4.2.2). Because of character simplification, same situation happens to character 面, which originally only has “face” meaning, but also means “noodle” now. (see 4.2.2) Explanations from *Shuowenjiezi* can’t explain these meanings well. Zhang (2009) discussed his thoughts on the character simplification.

Simplified Chinese characters always combine several characters with different meanings into one, which inevitably leads to chaos in the primarily reasonable Chinese character system. For example, for the characters 于 and 於，后 and 後，征 and 徵，發 and 髮，the distinctions among these common characters is no longer known by the young generation. Distinguishing and applying other more complicated and professional Chinese characters would be even more out of the question.
From the excerpt above, the combination of simplified and complex characters appears a lot in today’s Chinese character system. Therefore, it can be inferred that there will be more failed examples of using the explanations from Liu-shu theory because of this simplification. If the teacher-researcher wants to teach characters with their new meaning, it is impossible to rely on Liu-shu theory for an explanation.

### 7.2.3.3 Transformations of Character Pronunciations

The change of pronunciation has significantly influenced phono-semantic characters. As mentioned above, phonetic components of phono-semantic characters need to show the character pronunciations, however, the transformation of pronunciation has rendered the pronunciation of many characters different from their phonetic components. Like the character 脚 (foot), because of its phonetic part’s, 却, pronunciation changes, it can no longer show the pronunciation of character 脚(foot). (see 4.4.1)

There are two possible explanations for this. One is that the pronunciation of the character itself changes. The character 江(big river), which appears in Xu’s (100AD) explanation of phono-semantic characters, is a typical example. According to the explanation from Shuowenjiezi, ‘江，从水工声’ (江, belongs to the water semantic category, and 工 is its phonetic component.) The explanation tells us that 江 has the same pronunciation as the character 工. Zhang (2004) conducted research into the transformation of 江’s pronunciation. According to him, 江 was originally pronounced as ‘kong’, the same pronunciation as 工 ‘kong’ at that time. Later on, influenced by the southern dialect, 江 was pronounced as ‘kang’, and in the Ming dynasty, the pronunciation of 江 was palatalised into ‘jiang’, its current pronunciation.

Graph 7.1: The transformation of 江 pronunciation
We can see the 江 pronunciations went through a lot of changes with time, and its phonetic component no longer works well for its pronunciation.

The other explanation is that the phonetic component’s pronunciation has changed, rendering the use of the phonetic component as an indicator of pronunciation less reliable. The character 空(hole) illustrates this phenomenon. In Shuowenjiezi, 空 (hole) also belongs to the phono-semantic character category. It is given the explanation as: ‘空，窍也。从穴，工声。’ (空 means the hole. Its semantic component is 穴(means hole) and 工 is used as its phonetic component.) This character 空 is pronounced as ‘kong’. From the previous example 江, we know that 工 is also originally pronounced as ‘kong’. However, due to phonetic transformation, 工 is now pronounced ‘gong’, instead of ‘kong’, which means it fails to indicate the pronunciation of 空.

**7.2.3 Ancient Liu-shu Theory Limitation**

The transformations of characters’ forms, meanings and pronunciation are important reasons, but not the only reasons why Liu-shu theory doesn't work well for some characters. There are problems existing in the Liu-shu theory itself, which make using some explanations inapplicable in teaching beginning learners in Australia.

One problem is some explanations require students to have pre-existing Chinese characters knowledge. The failed teach for phono-semantic character 脚 (foot) is a typical example (see 4.4.1). Australian beginning learners have little knowledge of Chinese characters, meaning the phonetic component of the character will likely also to be a new character for them. Learning both the phonetic component and the new character will undoubtedly place an extra burden on the learners. In addition, the teaching of associative character 春 (spring) (see 4.3.2) also shows that understanding explanations from Shuowenjiezi requires students to have profound Chinese character knowledge because of the comparatively complicated meaning for character parts.

Another problem is that for properly grasping the explanations from Shuowenjiezi, Chinese culture is also essential. For characters 五(five) and 七(seven), students
can’t understand the explanations because they require students to have basic Chinese philosophy knowledge. (see 4.2.2) The book is much more than simply explaining the origins of each character. Xu Chong (100 AD), the son of Xu Shen, wrote a letter to the emperor explaining the book content. He wrote a short sentence to introduce what Shuowenjiezi includes: ‘六艺群书之诂，皆训其意，而天地鬼神、山川草木、鸟兽昆虫，杂物奇怪、王制礼仪、世间人事，莫不毕载。’ (Shuowenjiezi includes the content from the Six Classics, which are the Book of Songs, the Book of Music, the Book of History, the Book of Changes, the Book of Rites and the Spring and Autumn Annals. It also covers everything in the world, from heaven to hell, from mountains from rivers, from monarchies to rites. ) The introduction tells the reason why explanations are comparatively hard to understand. The book, Shuowenjiezi, not only aims to explain the origins of each character, but also involves different ideas from classic literature, as well as every aspect of life including philosophy, aesthetics, history, and literature etc. Considering the student’s age, at which they are too young to sufficiently understand their own culture. And understanding a foreign culture, which is believed to be hard by the teacher-researcher, is a too heavy burden for stage 2 and stage 3 students.

7.2.4 Teacher-supplied Pictorial Mnemonics vs Students

Self-generated Pictorial Mnemonics

Regarding the modernized pictographic principle, it is analyzed from two aspects: teacher-supplied pictorial mnemonics and students self-generated pictorial mnemonics.

Teacher-supplied pictorial mnemonics is quite efficient when students are shown the character pictures. Because the character picture shows the character meaning vivid and direct, it helps students to make the shape- and- meaning link. As in the example, character 脚 (foot) (see 5.1.1), students found it hard to link to the character meaning by themselves. However, with the picture, which draw character 脚 (foot) into feet shape, students can link the shape and character meaning much more easily. Another important advantage of using character picture is that it can greatly enhance students’ interest. When students were shown the character picture of 面 (noodle), a lot of
exclamations and agreement can be heard from them. However, when the pictures supplied by teacher are not directly linked to the characters, explanations need to be considered carefully from students’ cultural background. Otherwise, it is possible that the pictures cannot help students remember characters better, but add extra burden for them instead.

Compared with teacher-supplied pictorial mnemonics, student self-generated pictorial mnemonics has its own merits. Most importantly, since students generate the mnemonics themselves, the mnemonics is more close to their remembering mode, which makes it easier for them to keep the memory. Another important reason is that due to different ages and cultural backgrounds, students are very likely to think and remember the character from different aspect, which is as analyzed in the character 头 (head) in 5.2.1. However, because of the low iconicity between the character shape and its meaning, it also often happens that students find it hard to make the association themselves, or they may also go astray in creating the mnemonics by making the mnemonics irrelevant to the character meaning, as shown in table 5.2. In that situation, teacher’s guidance will be essential.

7.2.5 Deconstructing Characters into Components is Beneficial for Students’ Character Learning

In the modernized associative principle, the first step is deconstructing the character into small components: simple Chinese characters, or English letters and numbers. Some benefits can be seen in the deconstruction.

Deconstructing complicated characters into simple characters are helpful for students’ character learning. First, it can help them revise their previous character knowledge. As discussed in 6.1.1, to deepen students’ memory, revise students’ old knowledge is necessary, especially considering their comparatively young age. Second, studying the difficult knowledge with simple previous knowledge is in accordance with natural learning process. According to prototype theory of cognitive psychology, knowledge can be divided into central knowledge and edge knowledge. Edge knowledge is the hard knowledge, which, in this case, is complicated Chinese character, while central knowledge is the basic and easy knowledge, which, in this
case, is simple Chinese character. So using simple characters to learn complicated character is mostly acceptable for students. Third, teaching students’ complicated Chinese characters with simple Chinese characters are helpful for their Chinese characters writing. Since CFL (Chinese as foreign language) learners, who tend to view Chinese characters as pictures instead of coherent and meaningful components, have different understandings towards Chinese characters, they are inclined to “draw” the characters instead of writing characters. Due to that, there often appear round corners, or circles in their character writing, which are not allowed in Chinese characters. However, if students write complicated characters according to the simple characters in their memory, they write the complicated ones in a correct Chinese character writing way.

Apart from deconstructing complicated Chinese characters into simple one, deconstructing characters into English letters and numbers is also found beneficial for students’ character learning. The most obvious advantage English letters and numbers deconstructing can reduce students’ new character learning load. Use the first language knowledge in second language learning is an irresistible learning process, especially for young learners. (Upton, 2001) By finding the similarity between English letters and Chinese characters, students are able to retain character memory in a better way. Another advantage is that students’ fear and pressure is greatly decreased when fronting new characters with the help of English and number knowledge. It can be understood as human beings are unsurprisingly afraid of unfamiliar item, which can be largely lessened with the help of familiar knowledge.

However, for both deconstructing methods, the teacher-researcher also finds that due to lack of essential link, they are not so helpful for students to remember character meanings.

7.2.6 Reconstruction with Real Life Story is Essential After Deconstruction

As discussed above, the major shortcoming for character deconstruction is the lack of essential association between the character meaning and character shape. Thus the teacher-researcher just decided to use story-telling to establish the association. After
the failure of a story made up by the teacher-researcher herself, she found using students’ own real story can be considered most useful. There are three major advantages found in using story-telling.

First, students are quite familiar with the story-telling learning style because they have telling stories as their daily routine since kindergarten. And the teacher-researcher finds students show great interest in using listening to others’ stories as well as telling their own stories. (see 6.2) In addition, it is found that story-telling is an effective second language learning tool. Nicholas & Abbott (2011) concluded, “Literature does have something very special to offer to language”. Thus it is assumed story-telling is suitable for teaching Australian students.

Second, real-life story has the inherent logic. It is useful for students’ character learning. Because the real-life story is something really happened, compared with the story made up by the teacher-researcher, as the story for character 春 (spring) (see 6.2), its inherent logic is much stronger (see the example of character 水 (water) in 6.2). By memorizing the story, students’ character recognition and character meaning memory are improved at the same time.

Last but not least, telling and listening to the real-life story can also further students’ interest and confidence. Owing to similar growing up background and similar age, students are able to find similarity in story. In the example of character 水 (water), the water-sport, jetski, is familiar to all the students. So one student’s story may remind other students’ own life experience, which will make them feel more interested and confident in learning the character.

7.3 Implications for Making Chinese

There are several implications of this study that are useful in the field of Chinese character teaching.

First of all, it helps Chinese teachers understand the Australian students’ thinking mode. Considering the huge differences laying between Chinese teacher and students’ ages, beginning mandarin teachers always find it challenging to think from students’ aspect. The data from the self-reflective journal record students’ reactions towards
teacher’s character teaching, as well as their own mnemonics of memorizing Chinese characters. They would helpful for beginning mandarin teachers to better understand students’ thinking mode, and make lesson plans more acceptable for Australian students.

Secondly, the new framework proposed in this research is good reference for future character teaching. According to the teacher-researcher’s experience, the biggest problem for beginning mandarin teacher in teaching Chinese character is how to analyse the character, especially the complicated characters. Thus, the framework of teaching characters concluded in this research is able to provide the teacher some hints, with which they can cultivate and develop their own teaching explanations.

Thirdly, the combination of western educational theory and Chinese traditional character-formation theory is innovating and inspiring. In the past, most researches are mainly about explaining the characters with Chinese traditional theory only or with western educational theory only. However, in order to make traditional theory modernized, and to make western educational theory suitable for Chinese character teaching, it would be necessary to make a combination. More suitable methods need to be explored.

7.4 Limitation of this Study and Recommendation for Further Study

Like other researches, it should be recognised that this research also has its own limitations.

First of all, the time frame is one of the biggest concerns for this research. The research is comparatively short-term, which requires it to be finished within one year and a half. However, because Australia is a completely new environment for teacher-researcher, she spends much of the time to get herself used to the Australian class, which is extremely different from Chinese class. And a mature framework for Chinese character teaching can hardly be established within short time; instead it requires a longer-term and more continuous study. In addition, since the teacher-researcher’s teaching is part of the ROSETET (Research Orientated, School Engaged,
Teacher Education) program, the mandarin lessons are arranged according to the school time allocation, which is 45 minutes per week. Time for each lesson is quite limited, especially considering students’ age, which requires longer time for them to understand and get used to Chinese characters. The teacher-researcher sometimes will feel herself in a rush and doesn’t have enough time to put all the ideas into practice. Thus, the teacher-researcher finds it hard to keep track of students’ further development. The teaching outcome can be extremely different if students were given more time in Chinese character learning. What’s more, because of the time limitation, the data collected is mainly from the teacher-researcher’s self-reflective journals and students’ interview. The data may fail to reflect students’ real learning situation because it can be comparatively subjective and one-sided.

Another big problem lies in the generalisability of this research. The research is conducted in a Public school in Western Sydney region, targeting at stage three students. It is necessary to notice that this public school is quite supportive in Mandarin teaching, that you can see the signs with English, Chinese characters and pinyin everywhere. Therefore it remains unknown whether the research outcome can be applied in character teaching in other schools in other regions of Sydney or even other states of Australia. In addition, these stage three students are all young and beginning Mandarin learners. However, it is worth questioning whether the result can be used in Chinese characters teaching for adults, or whether it can be applied in advanced mandarin learners’ Chinese character learning.

Last but not least, the new framework mainly developed two principles from traditional Liu-shu theory: the pictographic principle and associative principle. Owing to the limitation of time, the rest four haven’t been successfully developed, especially the indicative principle and phono-semantic principle. Both of them have been examined useful for teaching some characters, and phono-semantic characters take a very big portion of all the characters. Thus future is needed in developing these rest four principles.

Nevertheless, the research still provides many valuable ideas for future studies. At least, it is innovating to combine the modern western theory with Chinese traditional character-formation theory to help students better build up their Chinese character learning ability. And in carrying out this research, there have been some issues arisen
which are worth exploring for other researches: (1) How to combine indicative principle and phono-semantic principle with some modern western theories to make them available for teaching Australian students Chinese characters? (2) How to apply the modernised associative principle, which is put forward in this research, in more Chinese characters’ teaching? (3) How to standardise students’ characters writing, including character writing forms and shapes? Further studies can be carried out around these three questions.
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Appendix

Appendix 1: University of Western Sydney Ethics Approval

Locked Bag 1797
Penrith NSW 2751 Australia
Office of Research Services

ORS Reference: H10563 14/011536

HUMAN RESEARCH ETHICS COMMITTEE

30 May 2014

Doctor Jinghe Han
Centre for Educational Research

Dear Jinghe,

I wish to formally advise you that the Human Research Ethics Committee has approved your research proposal H10563 “An Investigation of Employing and Developing Liu-shu Theory to Teach Australian Students Chinese Characters in Mandarin Class - An action research”, until 31 December 2014 with the provision of a progress report annually and a final report on completion.

Conditions of Approval

1. A progress report will be due annually on the anniversary of your approval date.

2. A final report will be due at the expiration of your approval period as detailed in the approval letter.

3. Any amendments to the project must be approved by the Human Research Ethics Committee prior to the project continuing. Amendments must be requested using the HREC Amendment Request Form: http://www.uws.edu.au/__data/assets/pdf_file/0018/491130/HREC_Amendment_Request_Form.pdf

4. Any serious or unexpected adverse events on participants must be reported to the Human Ethics Committee as a matter of priority.

5. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the Committee as a matter of priority

6. Consent forms are to be retained within the archives of the School or Research Institute and made available to the Committee upon request
Appendix 2: State Education Research Approval Process (SERAP) Approval

Ms Yuanhong Wu
University of Western Sydney Village
Penrith Campus
Locked Bag 179
PENRITH NSW 2747

Dear Ms Wu

I refer to your application to conduct a research project in NSW government schools entitled *An Investigation of a Pedagogical Framework of Chinese Character Teaching for Australian School Students - An Action Research*. I am pleased to inform you that your application has been approved. You may contact principals of the nominated schools to seek their participation. You should include a copy of this letter with the documents you send to schools.

This approval will remain valid until 31 December 2014.

The following researchers or research assistants have fulfilled the Working with Children screening requirements to interact with or observe children for the purposes of this research for the period indicated:

<table>
<thead>
<tr>
<th>Name</th>
<th>Approval expires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yuanhong Wu</td>
<td>24/05/2019</td>
</tr>
</tbody>
</table>

I draw your attention to the following requirements for all researchers in NSW government schools:

- School principals have the right to withdraw the school from the study at any time. The approval of the principal for the specific method of gathering information must also be sought.
- The privacy of the school and the students is to be protected.
- The participation of teachers and students must be voluntary and must be at the school's convenience.
- Any proposal to publish the outcomes of the study should be discussed with the research approvals officer before publication proceeds.

When your study is completed please email your report to: serap@det.nsw.edu.au.

You may also be asked to present on the findings of your research.

I wish you every success with your research.

Yours sincerely

Dr Susan Harriman
Leader, Quality Assurance Systems
8 July 2014

Policy, Planning and Reporting Directorate
NSW Department of Education and Communities
Level 1, 1 Oxford Street, Darlinghurst NSW 2010 – Locked Bag 53, Darlinghurst NSW 1300
Telephone: 02 9284 6000 - Email: serap@det.nsw.edu.au
Appendix 3: Letter to Principle

21/05/2014

Dear Principle of Springwood Public School,

I am Yuanhong Wu, the Chinese volunteer in Springwood Public School.

I wish to carry out a research project in my classes, as a part of my master degree in education in University of Western Sydney. I would be grateful for your permission and support. Over the classes for the rest of the year, I would like to investigate a pedagogical framework of teaching characters through my characters teaching in class.

In my data collection, I plan to conduct surveys and interviews to 2 year 3/4 classes and 3 year 5/6 classes and classroom teachers of these five classes. Surveys will be carried out for two times to students at the end of term 3 and the end of term 4. Each survey may request students to withdraw from classes for 15 minutes to finish the survey. Apart from surveys, teachers and students will also be invited to attend interviews at the end of term 4. In interviews, audio and videotaping, as well as photographs may be used to record. 10 students of each class will be invited, which means 50 students in total. 10 of them will join a group interview together in order to reduce their anxiety. Each interview will last no longer than 20 minutes in lunchtime. 5 classroom teachers will be interviewed individually in lunchtime. Each interview will last no longer than 30 minutes. The following is the timeline for my research.

<table>
<thead>
<tr>
<th>Type of activity</th>
<th>Participants in each school</th>
<th>Amount of time activity will take</th>
<th>When activity will take place</th>
<th>Participation strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveys 1</td>
<td>57 year 3/4 students, 85</td>
<td>15 mins</td>
<td>In class time, term 3 and</td>
<td>Whole class withdrawn from class</td>
</tr>
<tr>
<td>Surveys 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey</td>
<td>5/6 students</td>
<td>term 4 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------</td>
<td>---------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview</td>
<td>20 year 3/4 students, 30 year 5/6 students</td>
<td>20 mins</td>
<td>In lunch time, term 4, 2014</td>
<td>Selected students take interviews in lunch time</td>
</tr>
<tr>
<td>Interview</td>
<td>2 year 3/4 classroom teachers, 3 year 5/6 classroom teachers</td>
<td>30 mins</td>
<td>In lunch time, term 4, 2014</td>
<td>Classroom teachers take interviews in lunch time</td>
</tr>
</tbody>
</table>

I guarantee the voluntary of the participants. They can withdraw the research at any time for any reason. I also guarantee the confidentiality of the information. I will only use the information that is in the public domain and within the law. If I need to use the information that is in any way sensitive, I will ask for the originator’s permission before. I will ensure the total confidentiality of students’, parents’, teachers’ as well as school’s name.

Sincerely

Yuanhong Wu
Appendix 4: Participant Information Sheet (General)

Add School/Institute Name
University of Western Sydney
Locked Bag 1797
Penrith NSW 2751
Australia
Telephone: 0452230880
e-mail: irishong1106@gmail.com

Participant Information Sheet (General)

Project Title: An Investigation of a Pedagogical Framework of Chinese Character Teaching for Australian school Students – An Action Research

Project Summary: Based on Liu-shu Theory (Chinese ancient character formation theory), this study mainly aims to build up a pedagogical framework of Chinese character teaching in teaching Australian students in their Mandarin class.

You are invited to participate in a study conducted by Yuanhong Wu, Master of Education (Hons) Candidate and School of Education under the Supervision of Jinghe Han, Doctor and School of Education.

How is this study being paid for?
The study is being sponsored by Center for Educational Research.

What will I be asked to do?
You will be asked to participate a focus group interview.

How much of my time will I need to give?
15 minutes will be needed in total for interview.

What specific benefits will I receive for participating?
(1) You can revise the character knowledge they learned in class.
(2) Your courage and eloquence will be improved in discussion with others.
(3) You will receive a special Chinese gift.

Will the study involve any discomfort for me? If so, what will you do to rectify it?
In general, there will be no discomfort in the study. You can withdraw anytime you feel any discomforts. If any discomfort appears in focus group interview, I will stop the interview and choose another time to continue.

How do you intend on publishing the results.
The findings of the research will be published in UWS library. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report, except as required by law.
There are a number of government initiatives in place to centrally store research data and to make it available for further research. For more information, see http://www.ands.org.au/ and http://www.cdis.uq.edu.au/about. Regardless of whether the information you supply or about you is stored centrally or not, it will be stored securely and it will be de-identified before it is made available to any other researcher.

Can I withdraw from the study?
Participation is entirely voluntary and you are not obliged to be involved. If you do participate, you can withdraw at any time without giving any reason.
If you do choose to withdraw, any information that you have supplied will be double deleted or shredded.

Can I tell other people about the study?
Yes, you can tell other people about the study by providing them with the chief investigator's contact details. They can contact the chief investigator to discuss their participation in the research project and obtain an information sheet.

What if I require further information?
Please contact Yuanhong Wu should you wish to discuss the research further before deciding whether or not to participate.
Yuanhong Wu/ Master of Education (Hons) Candidate/ +61 452 230 880

What if I have a complaint?
This study has been approved by the University of Western Sydney Human Research Ethics Committee. The Approval number is H10563

If you have any complaints or reservations about the ethical conduct of this research, you may contact the Ethics Committee through the Office of Research Services on Tel +61 2 4736 0229 Fax +61 2 4736 0013 or email humanethics@uws.edu.au.

Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

If you agree to participate in this study, you may be asked to sign the Participant Consent Form.
Appendix 5: Participant Information Sheet (parents and caregivers)

Human Research Ethics Committee
Office of Research Services

Participant Information Sheet (Parent/Caregiver)

An information sheet, which is tailored in format and language appropriate for the category of participant - adult, child, young adult, should be developed.

Note: If not all of the text in the row is visible please 'click your cursor' anywhere on the page to expand the row. To view guidance on what is required in each section 'hover your cursor' over the bold text. Further instructions are on the last page of this form.

Project Title: An Investigation of a Pedagogical Framework of Chinese Character Teaching for Australian school Students – An Action Research

Who is carrying out the study?

Yuanhong Wu, a HDR student from School of Education, UWS

Your child is invited to participate in a study conducted by Yuanhong Wu, Master of Education (Hons) Candidate and will form the basis for the degree of Master of Education (Hons) Candidate at the University of Western Sydney under the supervision of Dr. Jinghe Han.

What is the study about?

Based on Liu-shu Theory (Chinese ancient character formation theory), this study mainly aims to build up a pedagogical framework of Chinese character teaching in teaching Australian students for their Mandarin class.

What does the study involve?

I am currently a volunteer mandarin teacher in Springwood Public School. I will teach students Chinese characters in their mandarin classes in a specific way. After a period of teaching, I would like to do an interview with students about my teaching effect. The interview is mainly about checking the characters students learned in their mandarin classes. Five students will be involved in a same interview together. Each interview will last for approximately 15 minutes.

How much time will the study take?

Recordings will be:
Collected during my teaching in Springwood Public School, which is from July 2014- December 2014. The data will be collected through an interview and surveys.

The digital data collected will be stored in an University of Western Sydney computer, which can only be accessed through personal login by myself and my supervisor. The paper data will be stored in a personal cabinet, which can only be accessed through the keys by myself and my supervisor. After I graduate from UWS, my supervisor will organize the storage until the time it needs to be destroyed. After that they will be destroyed by my supervisor.

Accessed only by the author myself and my supervisor.
The data collected from surveys and the data transcribed from interview's recordings will only be used in my thesis anonymously.

Page 1 of 3
If you have concerns about what has been recorded, you may access recordings of your child within the period of storage. If you would like to access to the recordings and surveys, please contact me through the mobile phone. My phone number is listed at the second page. I will organize to store it in an USB for you.

Children not participating in the study will be arranged to do their normal activities during the time the research is being carried out.

Will the study benefit me?
(1) It will help your child revise the character knowledge they learned in class.
(2) Your child's courage and eloquence will be improved in discussion with others.
(3) A special Chinese gift will be given to participant.

Will the study have any discomforts?
In general, there will be no discomfort in the study. Participants can withdraw anytime they feel any discomforts. If any discomfort appears in focus group interview, I will stop the interview and choose another time to continue.

How is this study being paid for?
The study is being sponsored by Center for Educational Research.

Will anyone else know the results? How will the results be disseminated?
All aspects of the study, including results, will be confidential and only the researchers will have access to information on participants.

Can I withdraw my child from the study?
Your child's participation in the study is entirely voluntary: you are not obliged to consent. Your child may withdraw from the study at any time - or you may withdraw your child from the study at which point all written and audio records of your child's participation will be destroyed.

Can I tell other people about the study?
Yes, you can tell other people about the study by providing them with the chief investigator's contact details. They can contact the chief investigator to discuss their participation in the research project and obtain an information sheet.

What if I require further information?
When you have read this information, Yuanhong Wu will discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact Yuanhong Wu/ Master of Education (Hons) Candidate/ +61 452 230 880

What if I have a complaint?
This study has been approved by the University of Western Sydney Human Research Ethics Committee. The Approval number is H10563
If you have any complaints or reservations about the ethical conduct of this research, you may contact the Ethics Committee through the Office of Research Services on Tel +61 2 4736 0229 Fax +61 2 4736 0013 or email humanethics@uws.edu.au.

Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

If you agree to participate in this study, you may be asked to sign the Participant Consent Form.
Appendix 6: Participant Consent Form (general)

Participant Consent Form

This is a project specific consent form. It restricts the use of the data collected to the named project by the named investigators.

**Note:** If not all of the text in the row is visible please ‘click your cursor’ anywhere on the page to expand the row. To view guidance on what is required in each section ‘hover your cursor’ over the bold text.

**Project Title:** An Investigation of a Pedagogical Framework of Chinese Character Teaching for Australian School Students – An Action Research

I, ........................................, consent to participate in the research project titled An Investigation of a Pedagogical Framework of Chinese Character Teaching for Australian School Students – An Action Research.

I acknowledge that:

I have read the participant information sheet and have been given the opportunity to discuss the information and my involvement in the project with the researcher/s.

The procedures required for the project and the time involved have been explained to me, and any questions I have about the project have been answered to my satisfaction.

I consent to the interview (including video taping).

I understand that my involvement is confidential and that the information gained during the study may be published but no information about me will be used in any way that reveals my identity.

I understand that I can withdraw from the study at any time, without affecting my relationship with the researcher/s now or in the future.

Signed:  
Name:  
Date:  

Return Address: University of Western Sydney  
Locked Bag 1797  
Penrith NSW 2751  
Australia

This study has been approved by the University of Western Sydney Human Research Ethics Committee.  
The Approval number is: H10563

If you have any complaints or reservations about the ethical conduct of this research, you may contact the Ethics Committee through the Office of Research Services on Tel +61 2 4736 0229 Fax +61 2 4736 0013 or email humane@uws.edu.au. Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix 7: Participant Consent Form (Parents and caregivers)

Participant Consent Form for Parents/Caregivers
This is a project specific consent form. It restricts the use of the data collected to the named project by the named investigators. Where projects involve young people capable of consenting, a separate consent form should be developed. A parental consent form is still required.

Project Title: An Investigation of a Pedagogical Framework of Chinese Character Teaching for Australian school Students – An Action Research

I (parent name) ............................................ give consent for my child (child name) ............................................ to participate in the research project titled An Investigation of a Pedagogical Framework of Chinese Character Teaching for Australian school Students – An Action Research

I acknowledge that:

have read the participant information sheet and have been given the opportunity to discuss the information and my child’s involvement in the project with the researcher/s.

The procedures required for the project and the time involved have been explained to me, and any questions I have about the project have been answered to my satisfaction.

I have discussed participation in the project with my child and my child agrees to their participation in the project.

I understand that my child’s involvement is confidential and that the information gained during the study may be published but no information about my child will be used in any way that reveals my child’s identity.

I understand that my child’s participation in this project is voluntary. I can withdraw my child from the study at any time, without affecting their academic standing or relationship with the school and they are free to withdraw their participation at any time.

I consent to the interview (including audio taping). Please cross out any activity that you do not wish your child to participate in.

Signed (Parent/caregiver):  
Signed (child):  
Name:  
Name:  
Date:  
Date:  

Where projects involve young people capable of consenting, a separate consent form should be developed. A parental consent form is still required.

Return Address: University of Western Sydney
Locked Bag 1797
Parramatta NSW 2751
Australia

This study has been approved by the University of Western Sydney Human Research Ethics Committee.
The Approval number is: H10563

If you have any complaints or reservations about the ethical conduct of this research, you may contact the Ethics Committee through the Office of Research Services on Tel +61 2 4736 0229 Fax +61 2 4736 8013 or email humanethics@uws.edu.au. Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Character recognition activity

Do you still remember?

We learnt the Chinese characters of body parts. Link English meaning to the correct pinyin and character.

<table>
<thead>
<tr>
<th>Pinyin</th>
<th>Meaning</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>bì</td>
<td>nose</td>
<td>眼</td>
</tr>
<tr>
<td>jiǎo</td>
<td>foot</td>
<td>耳</td>
</tr>
<tr>
<td>yǎn</td>
<td>eye</td>
<td>鼻</td>
</tr>
<tr>
<td>ěr</td>
<td>ear</td>
<td>脚</td>
</tr>
</tbody>
</table>

Writing activity

Look at the words. Write down the Chinese characters with the help of some hints.

<table>
<thead>
<tr>
<th>Word</th>
<th>How do we learn it?</th>
<th>Characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>A smiling face with tongue stretch out</td>
<td></td>
</tr>
<tr>
<td>Hand</td>
<td>![Image of hand game]</td>
<td>Game of linking two fingers</td>
</tr>
<tr>
<td>Mouth</td>
<td>A big open mouth</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 9: Survey 2

Character activity

1. Do you still remember? 😊
These are the five characters we learnt last term. Link English meaning to the correct pinyin and character.

<table>
<thead>
<tr>
<th>Pinyin</th>
<th>Meaning</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>hēi</td>
<td>white</td>
<td>春</td>
</tr>
<tr>
<td>bái</td>
<td>spring</td>
<td>水</td>
</tr>
<tr>
<td>shuǐ</td>
<td>water</td>
<td>果</td>
</tr>
<tr>
<td>chūn</td>
<td>fruit</td>
<td>白</td>
</tr>
<tr>
<td>guǒ</td>
<td>black</td>
<td>黑</td>
</tr>
</tbody>
</table>

2. Are you as good as Sherlock Holmes? 🌲
As we learnt last term, 木 means tree. Can you guess the meaning of following characters?

Write down the English meaning in the bracket.

★ 木 (   )
☆ 林 (   )
★ 森 (   )
☆ 本 (   )
★ 末 (   )
### Writing activity

Look at the words. Write down the Chinese characters with the help of some hints.

<table>
<thead>
<tr>
<th>Word</th>
<th>How do we learn it?</th>
<th>Characters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spring</strong></td>
<td>Three people under the sun</td>
<td>三, 人, 日</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>7, J, K</td>
<td></td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>The Sun comes out</td>
<td></td>
</tr>
<tr>
<td><strong>Fruit</strong></td>
<td>A fruit box on the tree</td>
<td></td>
</tr>
<tr>
<td><strong>Black</strong></td>
<td>A person close to the fire with two dots of ash on face</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 11: Survey 4

**Character recognition activity**

Do you still remember?

We learnt the Chinese characters of body parts. Link English meaning to the correct pinyin and character.

<table>
<thead>
<tr>
<th>Pinyin</th>
<th>Meaning</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>bǐ</td>
<td>nose</td>
<td>眼</td>
</tr>
<tr>
<td>jiǎo</td>
<td>foot</td>
<td>耳</td>
</tr>
<tr>
<td>yǎn</td>
<td>eye</td>
<td>鼻</td>
</tr>
<tr>
<td>ěr</td>
<td>ear</td>
<td>脚</td>
</tr>
</tbody>
</table>

**Writing activity**

Look at the words. Write down the Chinese characters with the help of some pictures.

<table>
<thead>
<tr>
<th>Word</th>
<th>How do we learn it?</th>
<th>Characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>![Head Image]</td>
<td></td>
</tr>
<tr>
<td>Hand</td>
<td>![Hand Image]</td>
<td></td>
</tr>
<tr>
<td>Mouth</td>
<td>![Mouth Image]</td>
<td></td>
</tr>
</tbody>
</table>
Feedback to Miss Wu

1. Please select one of the following sentences that best describes your experience of learning of Chinese characters
   A. Very easy. I understand the Chinese characters quickly, and I find myself are doing a good job on it.
   B. Easy. Learning Chinese characters is not a difficult task for me, it is the same as learning other aspects of Chinese – speaking and listening.
   C. Not easy not difficult. I sometimes find the learning is difficult, but I am OK most time.
   D. A little bit difficult. Leaning Chinese characters sometimes put me on the spots; I find it is more difficult to learn than merely speaking.
   E. Very difficult. Leaning Chinese characters is extremely difficult for me.

2. How do you find the enjoyment of learning Chinese characters?
   A. I find the learning of Chinese characters really enjoyable, I like learning Chinese characters.
   B. I like learning Chinese characters but I like other activities in Chinese lessons better.
   C. I am not so interested in learning Chinese characters, but I am OK most time.
   D. I do not like learning Chinese characters that much, because it is difficult for me to learn.
   E. I do not like learning Chinese characters at all; it is boring and wasting time.
3. Below are 10 characters that we learned. Have a try and choose the correct meanings for them. Write the corresponding English letter in the “meaning” column.

<table>
<thead>
<tr>
<th>Chinese character</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>面</td>
<td></td>
</tr>
<tr>
<td>八</td>
<td></td>
</tr>
<tr>
<td>果</td>
<td></td>
</tr>
<tr>
<td>日</td>
<td></td>
</tr>
<tr>
<td>七</td>
<td></td>
</tr>
<tr>
<td>黑</td>
<td></td>
</tr>
<tr>
<td>春</td>
<td></td>
</tr>
<tr>
<td>白</td>
<td></td>
</tr>
<tr>
<td>水</td>
<td></td>
</tr>
<tr>
<td>饭</td>
<td></td>
</tr>
</tbody>
</table>

A. Eight  B. Day& sun  C. Black  D. Water  
E. Rice  F. Noodle  G. Spring  H. White  
I. Seven  J. Fruit
4. Below are the activities we are doing during lesson in terms of learning Chinese characters. Please rate them according to how helpful each method is for you to remember.

1 – Very helpful
2 – Helpful
3 – Just so-so
4 – Not so helpful
5 – Not helpful at all

<table>
<thead>
<tr>
<th>Activities</th>
<th>Your rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watching the video of character story</td>
<td></td>
</tr>
<tr>
<td>Looking at the character picture</td>
<td></td>
</tr>
<tr>
<td>Listening to Ms.Wu’s character story</td>
<td></td>
</tr>
<tr>
<td>Remembering with your own knowledge, like separating character into English letters</td>
<td></td>
</tr>
<tr>
<td>Showing my writing in front of the class</td>
<td></td>
</tr>
<tr>
<td>Doing character writing game, like 60 second dash</td>
<td></td>
</tr>
</tbody>
</table>

5. Your feedback to your Chinese teacher, you can write anything relating to your Chinese learning.
Appendix 13: Interview Questions for Students

1. What do you think about Chinese characters? Do you think whether they are easy or hard? Interesting or not?
2. Are they helpful for you to learn more about Chinese culture?
3. We’ve learnt some characters in the past one-year and a half. Which characters do you still remember?
4. Among the characters you remember, which one do you think is the easiest or hardest? And what helps you remember the character?
5. To help you better remember the characters, I’ve done several different activities, including telling stories behind the characters, looking at some pictures that are related to characters, playing some character games like 60 seconds dash, or bingo game. Which one of them do you think is the most helpful?

Appendix 14: Interview Questions for Classroom Teachers

1. What do you think of Chinese characters? Do you think they are necessary and will they be too hard for stage three students?
2. Can you, as a classroom teacher, still remember some characters or the methods I used to teach your kids Chinese characters?

3. I actually tried to use some different strategies in teaching Chinese characters, like showing them the character picture, like the noodle one, or link the characters to their English knowledge, telling them the character story, asking them to come to the front and show their writing to the rest, playing character games, like 60 seconds dash and bingo game. Do you think these strategies would make learning Chinese characters easier, or enhance their interest in learning characters?

4. Which activity among them do you think is the best?

5. If they are interested, can you give me an example of that, like has anyone of them talked about characters after lesson?

6. Do you think is there anything I need to improve or need to pay attention to in my future teaching?